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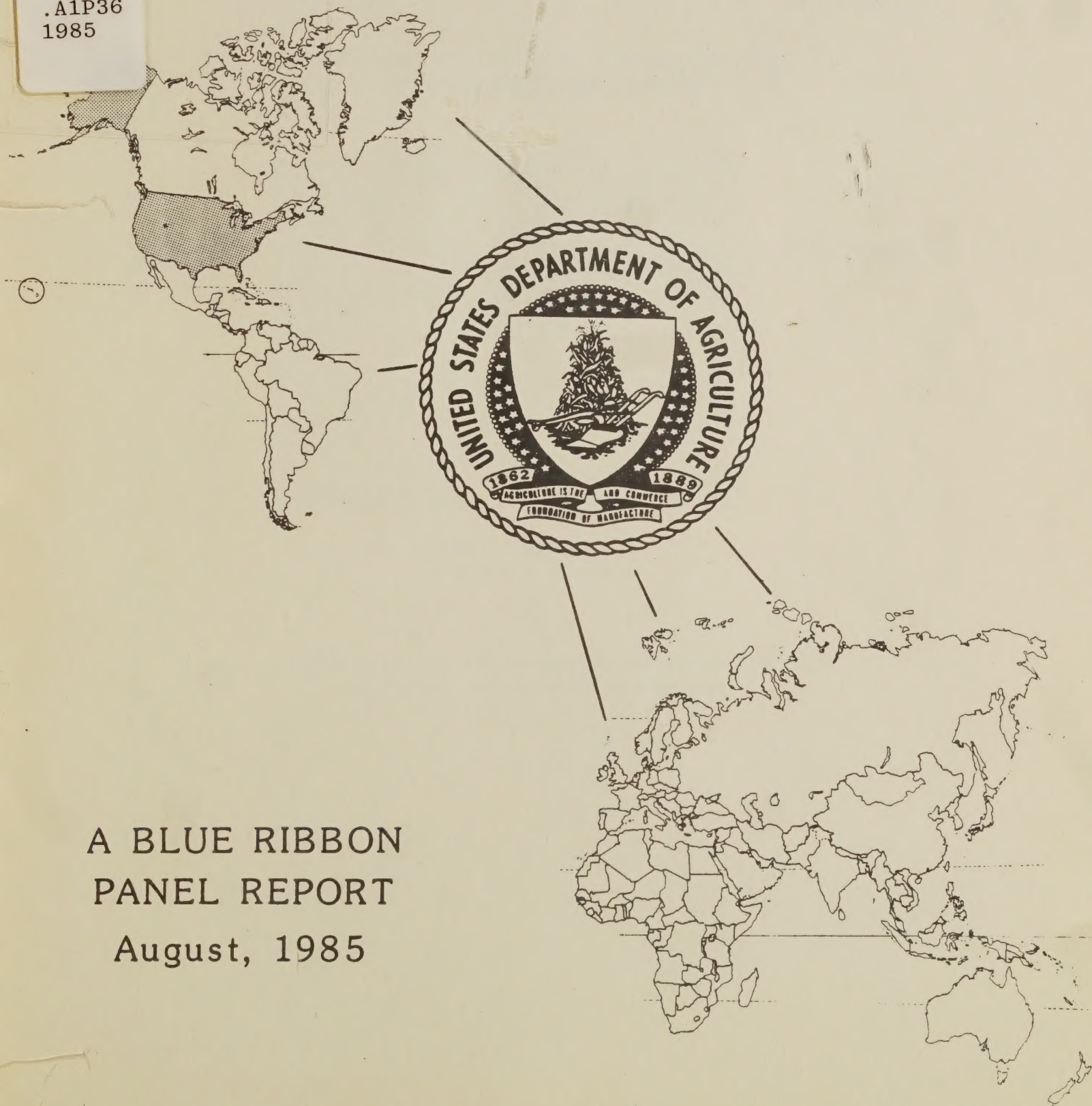
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# PROTECTING UNITED STATES AGRICULTURE FROM FOREIGN PESTS AND DISEASES

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August, 1985

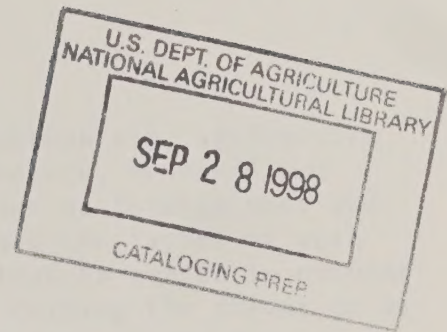


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PROTECTING UNITED STATES AGRICULTURE FROM  
FOREIGN PESTS AND DISEASES

Report of a Panel Study of Agricultural Quarantine Inspection Programs,  
PPQ-APHIS-USDA

August 1985

PANEL MEMBERS:

W. G. Eden, Chairman  
F. Raymond Brush  
HC Cox  
C. H. Kingsolver  
Dean F. Lovitt  
Francis J. Mulhern

Prepared for the Assistant Secretary for  
Marketing and Inspection Services





## Executive Summary

Agriculture is America's largest industry. Unfortunately, agriculture faces many major problems such as low-priced products, reduced land values, freezes, droughts, and the constant threat of foreign pest and disease introduction. Man can do little to lessen the impact of such problems as drought and cold but there is much that he can do to prevent the introduction of exotic pests and diseases. Curbing the threat or at least mitigating its impact is a major responsibility of the U.S. Department of Agriculture (USDA). However, in spite of the best efforts of the men and women in USDA, a few pests manage to slip into the Country each year. Especially serious and alarming is the fact that the number of pest infestations which require eradication efforts has increased during the past few years.

The situation has generated a great deal of concern within the Office of the Secretary of Agriculture. In an effort to determine causes of the increases and recommend measures to prevent or reduce such infestations in the future, the Assistant Secretary for Marketing and Inspection Services appointed a Panel of six people with regulatory and scientific backgrounds to review the Department's foreign pest exclusion operations. The Panel was also asked to assess the extent to which recommendations from an earlier study of the subject (The McGregor Report, 1973) have been implemented.

In pursuit of its assignment, the Panel talked with about 300 people representing more than 100 organizations (domestic and foreign), observed a number of regulatory programs in operation, visited several facilities of different sorts in the United States and other countries, and spent many hours in discussion and debate.

Most analyses of agriculture's problems involving foreign pest exclusion reveal that the public fails to appreciate or understand the importance of our agricultural resources. Our study of the Agricultural Quarantine Inspection (AQI) program was no exception. In fact, the problem appears to be greater than it has ever been. The number one problem facing AQI is ignorance and apathy on the part of the traveling public as well as those engaged in trade. People simply do not comprehend the drastic consequences that can occur if those resources are not protected. Overcoming the problem of public indifference would do much to prevent the introduction of foreign pests as well as lessen their impact if they slip past the AQI net.

### The Impact of Exotic Pest Introductions

When infestations or outbreaks of foreign pests or diseases occur, the normal movement of people and commodities is often delayed or halted. Accusations and complaints are made about government interference in travel, trade, and marketing practices. As an example, when citrus canker was found in Florida, all markets had to be temporarily closed. Treatments which required meticulous cleaning, as well as extra precautionary measures, had to be imposed. Fruit had to be covered from time of harvest until it was dipped. PPQ programs in other States were delayed or the level of effort was reduced because personnel were rushed



to Florida to participate in a combined State and Federal emergency program.

Citrus canker also illustrates other problems that arise when foreign pests or diseases are discovered in the United States. Complaints from various sources were widely voiced, and magnified by the press, about the lack of a method for compensation. The outcry was heightened because the emergency came just at the time the industry was starting to recover from devastating freezes in previous years. Naturally, growers and processors were very critical of restrictions. At least 8,700,000 plants had to be destroyed, not including the 2,000,000 additional plants which will have to be destroyed because of the recent infestation. Losses due to restrictions on the sale of fruit for juice amounted to \$50,000,000.

Medfly eradication in California alone cost about \$100,000,000 from September 1982. Embargoes were placed on U.S. exports by eight countries. States placed quarantine on fruit being shipped from California. Thus, the loss to industry members was tremendous. Many people, but especially the parents of school children, were very upset about the potential effects of the aerial spray program. Areas to be treated had to coincide with times when children would not be exposed to pesticides while on school playgrounds or on field trips. Visits to physicians by people with allergies greatly increased. People with organic gardens protested in great numbers. Several law suits were filed in an attempt to prevent spraying. Helicopter sprayers were fired upon by high-powered rifles. Many complaints were made about pond pollution and pesticide damage to car paint. Roadblocks not only delayed traffic but were viewed as more bureaucratic red tape.

When a segment of our society has been through the sacrifices and inconveniences of an extensive eradication program, such as the medfly in California, they do not want to experience it again. The crux of the question is how to get the rest of society to feel the same way.

#### The Problems

The Panel identified 14 major problem areas that require action in order to reduce the impact of foreign pest introductions. They are as follows: (1) Public indifference, (2) postal regulations create a weakness in the AQI defense, (3) effective pesticides are needed for strong defense, (4) more fruit flies from Hawaii will infest the mainland, (5) exotic pests and diseases will plague the United States, (6) some countries claim U.S. sanitary barriers are economic barriers, (7) research not tuned to AQI needs, (8) biotechnology pathway needs USDA action, (9) industry is critical of technical decision making in AQI programs, (10) AQI inspection techniques and procedures need improvement, (11) excluding all pests and diseases is not realistic, (12) world trade and travel necessitates broader coverage by AQI, (13) more resources or more pest and disease outbreaks, (14) improve State, Federal, and industry relationships as well as internal relationships.

#### What Needs to be Done

In the past, APHIS has tried, with some success, to communicate the importance of excluding foreign pests, but it has not produced the changes so urgently needed. Recognizing the importance of, and serving



as spokesman for American agriculture, the Secretary of Agriculture should bring the influence and respect of his office to bear on the problem.

The Secretary can aid American agriculture immeasurably by helping increase public awareness about foreign pests at every opportunity. He needs to add his personal concern and tell what can be done about the problem. In some cases, the Secretary needs to interact with his counterpart in such agencies as EPA relative to the lack of effective pesticides to protect our agricultural resources and the Postal Service because the public's casual and improper use of the mails can cause the expenditure of millions of dollars to eradicate pest infestations. In other cases, he should take the case for foreign pest exclusion to the media, leaders of airports, airline and shipping companies, and other leaders of industry.

The recent airline hostage crisis highlighted the need to monitor all airline baggage. Many unforeseen pests and diseases with potential "explosive" effects exist in agricultural products hidden intentionally and inadvertently in baggage or hand luggage. Inspection of all such items has been a longtime goal of Agriculture. Therefore, it is highly important that Agriculture be an active participant in any planning for any additional activity involving baggage inspection now and in the future. This is not another bureaucratic activity to provide jobs. The goal is to protect the food supply of every person in this country.

The Secretary can perform a real service by warning the public about the serious consequences that we, as a Nation, face at a time when agriculture can ill afford to be damaged. It is much better to take the offensive in this important matter than to reap unjust criticisms when pest and disease infestations occur. For example, eradication of the tri-fly complex from Hawaii would not only provide greater protection against infestation by these pests on the mainland but also permit reassessment and deployment of PPQ resources.

In support of the Secretary, APHIS must be more aggressive and take the initiative to promote programs to improve the public's awareness about the dangers of exotic pests and diseases. Since airports, airlines, and other agencies are not willing to actively keep the public informed about the need to protect our agricultural resources, PPQ should accelerate and expand its own information campaign. As a start, expert professional analysis and guidance should be used to suggest ways to capture public attention and secure better cooperation. One approach might be a public symbol, such as Smokey the Bear. The use of detector dogs has certainly had a positive effect on the traveling public. For the first time, we saw passengers smiling as their bags were being surveyed by the dogs.

We live in a time of rapid change. The Agency needs to make a special effort to not only anticipate but also plan for such change--to be proactive, not reactive like most regulatory agencies. APHIS/PPQ must try to achieve as close to maximum exclusion as possible. There are major opportunities to not only ensure maximum defense against foreign pests as our imports increase, but PPQ can also provide the Department with added technical expertise to help facilitate export and trade in meetings like GATT. Current plans for International Programs, if implemented, will also help to fill that role. Many activities will help



prepare for the future. Among the more important are the following: (1) Greater use of inspection at point of origin, with approval of AQI systems in exporting countries as a long-term objective, (2) provide leadership in regulating biotechnology products and techniques, (3) acquisition of new technology to detect and/or determine the origin of prohibited plant and animal materials, (4) concentrate Agency efforts against pests and diseases of major economic importance, (5) review and improve current inspection techniques and procedures, and (6) strengthen highly trained strike teams, ready to eliminate new pest infestations upon discovery. We note that citrus canker in Florida is currently testing AQI capabilities in this area. In addition, the Agency needs to determine the real threat of the disease in Mexico and ensure that current restrictions being placed on imports from there are adequate.

Pest risk analysis and all that is involved in the process should receive high priority consideration if resources are to be used for maximum effectiveness. Greater attention within USDA needs to be given to obtaining quantifiable data that will give greater confidence to decisions about major threats. We have special reference to research on pest pathways, biology and taxonomy of potential high risk pests, and threshold levels required for establishment. Other factors also need to be considered.

Much can be done through effective interaction and good cooperation. APHIS has a good record in this respect but all good records can be improved. Innovative planning and better communication can enhance working relationships with the State regulatory agencies and the industries involved. Also, with proper planning and funding, the State agencies can extend APHIS/PPQ effectiveness in cargo inspection as well as pest detection. We especially urge the appointment of two technical advisory groups, one composed of highly competent experts from outside the Agency and an inter-Agency group of experts. This group would be recognized by regulated industries and would help improve their confidence in the decision making process within this area of government. They would continually evaluate and monitor Agency operations.

The need for increased funding or resources is almost always identified when major problem areas, such as protection of our agricultura resources, are identified. Increased funding now may go a long way in reducing the burgeoning need for emergency funds to combat introductions of exotic pests and diseases like those that have occurred in the past 10 years. Investments today will pay off in the future. The problems did not develop overnight, nor will they be resolved in a day. The Panel feels that the situation is so critical that it demands a reassessment of the use of funds within APHIS and the Department so that some of the changes can be made in 1986. It also proposes that a 5-year budget be developed to provide the framework for correction of the present situation.

Specific recommendations on each subject in this report are listed in the following section. Details and background information are provided in the body of the report.



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For DA.

Dev. 86 Suppl. Budget plan  
action plans

Oct 30 IN D.O. Recommendations

1. Sequence of events  
incl. time frames
2. Budget - over what  
we have now

1. Introduction

No recommendations.

2. Review and Analyses of The Emigrant Pests and APHIS Evaluation Tasks  
Force Report.

No recommendations.

3. Public Awareness

(1) The Panel strongly recommends that a more aggressive information program be implemented.

(2) PPQ should contract with an outside group of persons specially skilled in law, drug enforcement, or public relations to study the problem and recommend approaches that can be more effective in getting the cooperation of the traveling public in agricultural quarantine.

(3) The Secretary of Agriculture should bring the prestige of his position to bear on the importance of agricultural quarantine to the United States.

(4) The Secretary of Agriculture should meet with leading airport authorities and presidents of airline companies to communicate the critical need for agricultural quarantine, indicate his commitment to protect American agriculture from exotic pests, and seek their support.

(5) PPQ should develop a public symbol, similar to Smokey the Bear used by Forest Service, to help communicate the importance of agricultural quarantine to the traveling public.

(6) USDA should obtain authorization which will permit PPQ to use all funds obtained from fines for violations in support of specific public awareness activities.

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Fogg 4. Inspection

Postal

4.1 Introduction

Acknowledge within PPQ that absolute protection against exotic pests moved by man is not a feasible objective. Revise the Agency mission statement accordingly.

4.2 Postal

(1) The Panel strongly recommends that the Office of the Secretary of Agriculture promptly negotiate with the Postmaster General to resolve the problem of domestic first class mail as a pathway for pests from Hawaii and Puerto Rico to the mainland. If negotiations with USPS fail to resolve the problem, the USDA should immediately initiate action to obtain legislation to correct this major weakness in its protection of U.S. agricultural resources.

(2) APHIS should arrange with USPS headquarters to permit the Honolulu Post Office to cooperate in a test whereby a detector dog can be used to identify the volume of first class mail which may contain contraband plant and animal products.

(3) The Secretary of Agriculture should petition the Postmaster General to have all postal clerks, but especially those in Hawaii and Puerto Rico, be more diligent about inquiring about the contents of packages being mailed and make sure that Post Office patrons understand the law against mailing prohibited plant and animal products.

#### 4.3 Baggage

(1) The Panel recommends that the passenger baggage inspection program be continued.

(2) The Secretary of Agriculture should insure that PPQ is an active participant in the development of new airport and airline security procedures currently being studied by the Presidential Task Force which was appointed in July, 1985.

(3) PPQ should make maximum use of profiling, detector dogs and x-ray scanners.

(4) PPQ should contract with an appropriate research institution to make a determination of the importance of passenger baggage as a pathway leading to the establishment of plant and animal pests and diseases.

(5) The Panel recommends that fresh fruits and vegetables in passenger baggage be prohibited unless accompanied by a phytosanitary certificate and other documentation of origin.

#### 4.4 Cargo

(1) PPQ should develop a more creditable and realistic system of container and enclosed truck cargo inspection.

(2) PPQ should require a manifest control system at all ports such as is now in place in Charlestown, South Carolina.

#### 4.5 Ship Stores and Garbage

No recommendations.

#### 4.6 Military

No recommendations.

#### 5. Preclearance

(1) Encourage preclearance agreements with all countries that export a reasonable volume of agricultural products as long as that importation can be done with low risk to the United States.

(2) New agreements, such as cut flowers from The Netherlands, should be initiated on a trial basis in order to assure that the U.S. requirements

can be met.

(3) PPQ should take action to ensure that re-exported products are not shipped under a preclearance agreement.

(4) Maintain a constant stateside monitoring system with prompt feedback to exporting countries and receiving States.

(5) At least once per year have a member of the regulatory organization from the exporting country come to the United States to observe monitoring inspection of his country's products. Include regulatory people from the receiving States also.

(6) Develop and pursue a plan which will ensure a better unity of purpose between "port people" and those assigned to preclearance work in other countries.

(7) Require that regulatory agencies of exporting countries certify that products destined for the United States meet PPQ requirements prior to PPQ inspections.

(8) As a long-term objective in preclearance activities, PPQ should work toward approving AQI systems in the exporting countries and use PPQ personnel solely to monitor the systems.

*TADS*  
6. Pesticides

(1) The Secretary of Agriculture should impress the Administrator of EPA of his concern about the crisis facing agriculture due to the diminishing number of acceptable effective pesticides available for treating imports and of his desire to improve working relations between the agencies.

(2) There should be exchanges in personnel between offices of the Deputy Administrator, PPQ, and the Assistant Administrator, Office of Pesticides and Toxic Substances, EPA, to promote better understanding and communication between agencies.

(3) The Assistant Secretary for Marketing and Inspection Services needs to place a high priority on the development of new pesticides and new use patterns for current pesticides needed by PPQ for the treatment of imports and for the certification of U.S. agricultural commodity exports.

*IP Review*  
7. Trends in World Trade and Tourism

(1) The Secretary of Agriculture should propose that AQI expertise from APHIS be part of any U.S. negotiating team in the world trade and tariff meetings that President Reagan is seeking.

(2) PPQ should broaden its perspective to place additional emphasis on its technical role of supporting the U.S. position in world trade of agricultural commodities.

*TADS (Foss Input)?*  
8. Tri-Fly Complex



(1) The Panel recommends that eradication of the medfly from Hawaii, using the sterile male technique, begin as soon as possible.

(2) APHIS should start developing a plan for subsequent sequential eradication of melon fly and Oriental fruit fly,

**SERS -** 9. Survey and Detection

(1) PPQ should complete the survey and detection system for exotic pests and diseases as soon as possible since it is a vital component of its emergency programs.

(2) The Agency should proceed at once to develop, publish and keep current a list of potential high risk exotic pests and diseases, prioritized according to the danger to U.S. Agriculture. The Panel further recommends that this be the first assignment for TAP.

**RSS** 10. Quarantine 37

(1) The Panel recommends that the provisions of Section 8(e) and (f) of Quarantine 37 be retained with the addition of a system of spot checking at a variable rate to further assure the integrity of the procedure.

(2) Rock wool should be accepted as a growing medium.

(3) PPQ should reconsider the acceptance of unsterilized peat as an acceptable soil substitute.

(4) PPQ should hold a public hearing on the propriety of adding those genera of plants listed as such in the requests for addition to exemptions listed in Section 8, Quarantine 37.

**JP** 11. International Programs

(1) Proceed with implementation plans for completing the global organization for International Programs even if it must be done at the expense of other Agency activities.

(2) Continue to use foreign nationals in IP activities in countries where PPQ people are present to provide supervision.

(3) IP should have as a high priority the policy that its personnel keep other PPQ people, State counterparts, and industry organizations fully informed of its activities so they can better appreciate the benefits being derived from people on foreign assignments.

**TADS** 12. Research

(1) The Assistant Secretary for Marketing and Inspection Services should stress the importance of research relating to AQI programs within the Department's priorities so that when funds for research are being approved, adequate support for AQI programs will be assured.

(2) The Intradepartmental Technical Advisory Team, recommended in Section 16, should give prompt consideration to the following research areas:

- (a) Biology and taxonomy of potentially high risk pests and diseases when such information is not well known.
- (b) More definitive data on the expected economic impact of potential foreign pests becoming established in the U.S.
- (c) Conditions and threshold levels required for pest and pathogen establishment, especially the potential for using data on release of beneficial insects to develop mathematical models to estimate threshold numbers leading to pest insect establishment.
- (d) Detection technology.
- (e) Pest pathways and their interdiction.

(3) PPQ should also make a special effort to become informed about research which ARS has underway on techniques that may be useful in determining the origins of new infestations of pests and pathogens, keep abreast of progress, decide which projects have direct or indirect potential for operational use in the identification of foreign pest origin, and give priority to those with greatest potential for application in the field.

(4) The six-person (three APHIS and three ARS) committee working on ways to improve the process of clearing plant materials brought under quarantine into the United States should vigorously pursue its work and develop a system which will reduce the long time delays often involved in the process.

TADS

### 13. Citrus Canker

- (1) Research on all aspects of citrus canker should be continued and Federal/State emergency plans should be kept current.
- (2) PPQ should urge ARS to assist it in conducting epidemiological studies of citrus canker and/or bacteriosis in Mexico and the U.S. to define the extent of infection and its significance, so that effective precautions can be taken within Mexico to prevent its spread from the infected area.

SERS

### 14. Emergency Programs

- (1) Maintain and support an Emergency Programs strike force capability.
- (2) Investigations as to the source of infestations of exotic pests and diseases should be pursued with vigor.

RSS

### 15. PPQ and State Regulatory Agencies

- (1) PPQ should implement a system of Federal/State contractual agreements, similar to those used by FDA and EPA, for such activities as export phytosanitary inspection and container devanning inspections, in order to expand its inspection services.
- (2) With the exception of current authorizations, PPQ should not permit future importations into limited areas of the Country.

TADS

WOOD

16. Regulating Biotechnology Products and Processes

- (1) APHIS should take the lead in regulating biotechnological products or techniques that may be responsible for agricultural pests or diseases being introduced into the United States.
- (2) APHIS should make a special effort to assure that its personnel are well qualified to regulate these types of products.
- (3) APHIS should involve all competent authorities within the U.S. Department of Agriculture to assist it in meeting this pressing challenge to governmental regulation of imported products.
- (4) APHIS should place high priority on developing a program to inform the scientific community on this matter.

17. Pest Risk Analysis

No recommendations.

FOSS

18. Pest Exclusion from Hawaii

Plan, develop, and execute jointly with the State of Hawaii a more effective exclusion program for the State of Hawaii.

Backus

19. Communications

- (1) Place greater emphasis in employee training seminars and conferences on the ways the individual PPQ employees can assist in improving communications with PPQ cooperators and the public.
- (2) Increase the use of computer networking to speed up, increase, and improve accuracy of inter-agency communication.
- (3) Make timely and wider distribution of the monthly enforcement action report to the trade press, periodicals, newsletters of related industries, and to professional societies and amateur plant groups.
- (4) PPQ should develop a comprehensive list of PPQ communication receivers that need to be reached with information on current activities and proposals so that all segments of industry receive PPQ information pertinent to that industry.

Backus

20. Training

- (1) Continue to emphasize training of AQI personnel including continuing education of experienced employees.
- (2) Include in the training element on International Programs lectures for trainees by experienced, returning overseas personnel relative to the benefits to U.S. agriculture derived from their foreign assignments.
- (3) There should be a complete training program review every three years to insure that the training received by new officers is appropriate to the challenges in the changing environment in which they work.



*Jusmk*

21. Advisory Groups

(1) The Secretary of Agriculture should appoint a Technical Advisory Panel (TAP) of about ten highly competent technical experts who are recognized as such by the industries that PPQ regulates.

(2) PPQ should have an Interagency Technical Advisory Team (ITAT) consisting of a cross section of its staffs, ARS, CSRS and other USDA agencies.

(3) Once TAP recommendations are approved by the Deputy Administrator of PPQ, ITAT should monitor their implementation and report to TAP at least once per year.

22. Resources

*Backus*

(1) There should be a substantial increase in funds to improve the AQI program over the next five years in order to adequately defend the agricultural resources of the Country from exotic pests and diseases of plants.

(2) The Panel recommends that PPQ direct funds from some of its lower priority activities in order to take some immediate action on our more urgent recommendations. However, the Agency should also develop a five-year budget plan to implement the bulk of the recommendations as a component of its long range program.

23. Plan to Streamline and Stabilize Agriculture Quarantine Inspection Operations.

No recommendations.

*FOSS* 24. Canadian Border Repnt.

*Action plan/Recom for \$/5 staff*

25. For Mail Prog Improvement



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## 1. Introduction

Plant Protection and Quarantine (PPQ), Animal and Plant Health Inspection Service (APHIS), U. S. Department of Agriculture (USDA), has the responsibility for administering federal regulations and quarantines to:

- a. Prevent the entry of foreign plant pests and animal diseases
- b. Work with State regulatory agencies to survey for and detect new or exotic pest infestations,
- c. Control the interstate spread of pests which have become established in the United States
- d. Conduct eradication programs where feasible when potentially damaging pests are detected, and
- e. Certify U.S.-grown agricultural commodities as pest free to qualify for import into foreign countries

In addition, PPQ has been charged by Congress (or other appropriate Federal authority) to administer the Endangered Species Act of 1973, the Federal Noxious Weed Act of 1974, and Title III of the Federal Seed Act. The agency also has a large scale biological control program which it utilizes in its own operations as well as in cooperation with the States. It shares responsibility with the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA) in the regulation of biotechnological processes and products.

During the past few years the number of new pest infestations which have required eradication efforts on the part of PPQ and State plant pest regulatory agencies has been increasing and has had an appreciable impact on industry and the public. Some of the significant infestations have been:

1980	Mediterranean fruit fly, <u>Ceratitis capitata</u>	California
1981	Khapra beetle, <u>Trogoderma granarium</u>	New Jersey
	Mexican fruit fly, <u>Dacus dorsalis</u>	California
	Mediterranean fruit fly	Florida
	Corn cyst nematode, <u>Heterodera zeae</u>	Maryland
1982	Khapra beetle	New Jersey, New York
	Mediterranean fruit fly	California
	European larch canker, <u>Lachnellula willkommii</u>	Maine
1983	Oriental fruit fly, <u>Anastrepha ludens</u>	California
	Khapra beetle	Texas
	Malaysian fruit fly, <u>Dacus latifrons</u>	Hawaii
	Peanut stripe virus	Georgia
1984	Khapra beetle	Texas
	Oriental fruit fly	California

Mexican fruit fly	California
Peach fruit fly, <u>Dacus zonatus</u>	California
Mediterranean fruit fly	Florida
Honeybee tracheal mite, <u>Acaraspis woodi</u>	Texas,
	South Dakota,
	New York,
	Florida,
	Louisiana

Citrus canker, Xanthomonas campestris pv citri Florida

The entry pathways of most of these infestations have not been identified. Naturally, there are concerns within the Office of the Secretary of Agriculture about "what has gone wrong" and "where are the holes" that PPQ should be, but apparently is not successfully, covering. The Office of the Secretary is asking whether these infestations are a result of something the Agency has done or has not done or of something the public and/or industry is doing now that was not done previously.

To address these issues, the Assistant Secretary for Marketing and Inspection Services asked a group of six people (known as the Blue Ribbon Panel) with regulatory and scientific backgrounds to review and evaluate PPQ operations in foreign pest exclusion and related activities.

The panel consists of the following persons:

Dr. W. G. Eden, Chairman  
Former Chairman, Dept. of Entomology and Nematology  
University of Florida

Dr. HC Cox  
Deputy Administrator  
Western Region, USDA-ARS

Dr. Frances J. Mulhern  
Former Administrator, USDA-APHIS

Mr. Dean Lovitt  
Former Director, Plant Industry Division  
Michigan Dept. of Agriculture

Dr. Charles Kingsolver  
Former Director  
Plant Disease Research Laboratory, USDA-ARS

Mr. Ray Brush  
Director of Technical Services  
American Association of Nurseryman

The Panel had an orientation meeting with PPQ officials at the end of October 1984, and began making plans for the study. To gather information, we conferred with various PPQ people in Washington, in several regional and area offices, and in various action locations both domestic and foreign. We also met with people in other Federal



government agencies, representatives of industry, State regulatory agencies, State universities, national scientific societies, industry and governmental regulatory people from other countries, international organizations, and others.

Lists of people who provided us with information (Appendix B) and organizations with which we conferred or from which we received information (Appendix C) are included at the end of this report. The Panel had available various documents, previously prepared by PPQ, that related to the several aspects of PPQ operations and different segments of the agricultural industry. We also had documents from other sources that contained information and data relating to our assignment. These documents are listed as references in Appendix D. We also received extensive information by correspondence and telephone from many sources.

For reference use, we have included a list of acronyms and abbreviations in Appendix A.

Members of the Panel traveled extensively, both within and outside the United States, to observe and discuss PPQ operations. In order to accomplish the amount of travel deemed essential, the Panel divided into teams for the various trips. We met periodically in Washington, DC, to discuss our findings and integrate them into comprehensive form.

At the request of the administration, we have concerned ourselves primarily with the Agricultural Quarantine Inspection (AQI) program and only minimally with the various domestic activities, except those that impinge directly on the exclusion of pests from the country. Also, we approached our work primarily from the standpoint of an overview of the AQI program of PPQ and only incidentally with specific details of program activities. Thus, our report is essentially focused on issues which we believe to be most significant. We recognize that each of the issues is complex. In fact, any of them could warrant the full time of the Panel for a detailed review and proper evaluation. It is obvious that we could not devote this much effort to each issue. The presentation on each issue includes the methods that we used to get a grasp of the situation and problems, findings relative to the issue, conclusions about it, and our recommendations for PPQ action when action was believed to be appropriate.

We are aware, of course, that the Agency must carry out its responsibilities as set forth under various Federal laws and regulations. We did not make a study of these authorities, but when legislative authority appeared to be needed we have so indicated.

The Panel realizes that some of the activities it has recommended may already be underway. In some cases, we became aware of this during the process of our investigations and so indicated. Others may be occurring, but we did not pick up the information as we proceeded with our study.

The Panel is most appreciative of the many people and organizations that granted us untold hours of time during our investigations. The frank and open manner displayed by those to whom we went for information and assistance is sincerely appreciated. We are particularly grateful for

the assistance, tolerance, and candidness of the PPQ administration and staff during the course of our work. We are especially thankful to Richard R. Backus, Margaret Davis, Karen Murray, Tina Aris, and Audrey Raley for their untiring efforts in our behalf. Our task could not have been accomplished without that cooperation.

## 2. Review and Analyses of The Emigrant Pests Report and the APHIS Evaluation Task Force Report

The 1973 study entitled "The Emigrant Pests" and commonly called The McGregor Report, prepared by a task force in 1973 was (1) an analysis of the threat that exotic pests and diseases of plants and animals pose to the agriculture and environment of the United States, (2) an evaluation of the inspection and quarantine programs of USDA, and (3) a proposal for increasing the protection of the United States against these pests and diseases on a global basis. The Panel was asked by the Assistant Secretary to review that study and the report of the APHIS Evaluation Task Force which evaluated it in 1974, and to determine which actions and recommendations are still valid.

Methods: The Panel studied both reports. In order to assist our analyses, PPQ reviewed for us the actions the Agency took in response to recommendations in those reports. The Panel did extensive travel to PPQ facilities throughout the United States and abroad to observe the system in action.

Our comments are organized according to the numbered structure of Conclusions and Recommendations in The Emigrant Pests report. The final report of the APHIS Evaluation Task Force was structured in the same manner. Inasmuch as our charge was to evaluate actions and recommendations which are still valid, we have not commented on those recommendations which have been implemented, those where progress toward implementation is adequate or those which we considered to be no longer valid in 1985. Numbers in parentheses refer to recommendation numbers in the Evaluation Task Force Report. Only those recommendations which we felt need further attention are discussed.

### 81.1 Emphasize Global Movements

Conclusions: Recommendations which called for strengthening measures against foreign shippers, including immediate re-export of infested or contaminated commodities in lieu of treatment or cleaning, still seem to be valid; however, PPQ still follows a policy of "least drastic action" and treatment as appropriate. There is no indication that efforts have been made through IPPC to initiate a worldwide exchange of pest information but the recommendation is still valid (4).

### 81.2 Adopt Balanced Objectives

Conclusions: The Evaluation Task Force responded to the McGregor Report by proposing a revised goal statement. The Agency ultimately adopted the following goal: "To prevent the introduction and establishment of plant and animal pests into the United States and its possessions and facilitate the entry of U.S. agricultural products into the international markets." We are concerned that this statement means absolute exclusion of exotic pests. This is unrealistic, as we state later in Section 4.1 of this report. The goal should be revised to show that absolute protection is not possible.

### 81.3 Concentrate on the Highest Risks

Conclusions: The McGregor Report indicated that PPQ should concentrate its exclusion activities against pests of the highest risk to the Country. The Evaluation Task Force responded (1) that a list of 100 most important pests should be developed. A list of significant pests was developed, but there were problems involved with the criteria used in making the list. Consequently, it never received Agencywide acceptance. The Agency did not follow through on the McGregor recommendation to obtain research to develop



valid criteria which would be necessary to refine the pest list.

#### 81.4 Reduce Biological Uncertainties

Conclusions: Research to reduce biological uncertainty associated with many potential exotic pests was recommended by the McGregor Report. However, the Evaluation Task Force did not directly address the recommendation but proposed the development of an information collection and dissemination system. As a result, the Cooperative National Plant Pest Detection System was developed and is in place. Even so, the need for research to expand our biological knowledge of potential high risk pests is as great today as it was when the McGregor Report was written (See Section 12).

#### 81.5 Emphasize Compliance

Conclusions: The Evaluation Task Force recommendation (1), contrary to the McGregor Report, emphasized enforcement and penalties to achieve compliance with exclusion regulations. This concept is still the most important part of Agency philosophy. The Task Force did recommend (4) a greatly expanded information program in support of quarantine activities. While some good works have been done in this area, the Panel thinks a much more extended and concerted effort will be required (Section 3 of this report).

#### 81.6 Encourage Private Efforts

Conclusions: McGregor encouraged placing greater emphasis on the shared responsibility of the public and private sectors in protecting agriculture. The Task Force recommendations for an increased informational budget (1) and investigation of possible ways to encourage industry participation (2) were implemented. Even so, this continues to be an important area which deserves greater emphasis (See Section 3 and 19).

#### 81.7 Establish Risk Standards

Conclusions: Explicit standards as to how much pest risk will be tolerated is emphasized in the McGregor Report, and the Evaluation Task Force recommendations indicate general agreement. Agency attempts to establish explicit risk standards have resulted in little success. This is understandable to the Panel because of the great difficulty, if not impossibility, of putting unequivocal numerical values on factors involved in the probability of establishment (Section 17 of this report). Pest risk analyses are being done by the Agency in determining entry status for products, etc. Admittedly these analyses are subjective, but there is no realistic alternative. Certainly the need for sound pest risk standards is valid, but as of 1985, numerically explicit standards are not available. Concerted research in this area is certainly indicated (Section 12 of this report).

#### 81.8 Provide Evaluation

Conclusions: According to the McGregor Report, an intensive detection or survey capability would have to be in place before the effectiveness of a quarantine and inspection program can be evaluated. The Evaluation Task Force recommended cooperative efforts with other countries to determine the effectiveness of baggage inspection for quarantine protection (2). Information has been exchanged with other countries, but not on an organized and systematic basis through international agencies such as FAO or IPPC. There is still merit in the original recommendations.

The Evaluation Task Force also recommended that PPQ develop procedures that could be used to evaluate the effectiveness of the inspection process at ports

of entry (3). The Agency has tried but feels that its efforts have been unsuccessful. The recommendation is still valid and should be pursued with vigor.

#### 81.9 Involve State Regulatory Organizations

Conclusions: While no specific reference was made in the McGregor Report with respect to the involvement of State regulatory agencies in the national quarantine program, the Evaluation Task Force report included three valid recommendations in this regard. There is already considerable cooperative effort between PPQ and State regulatory agencies, and the Panel believes further extension of those efforts is essential (Sections 4.4, 9, 15, and 18 of this report).

#### 82.1 Develop a Source Inspection System

Conclusions: Inspection of products in the country of origin rather than at U.S. ports of entry is an important strategy recommended by the McGregor Report. The Evaluation Task Force recommended that a modified source inspection system be implemented on a case-by-case basis. The Agency has responded well to the source inspection system; it now has 17 active source inspection (preclearance) programs in effect. While there have been problems with and considerable resistance to preclearance programs, the Panel is convinced that inspection at source provides one of the most important procedures for excluding exotic pests and that it should be expanded as conditions in other countries permit (See Section 5).

#### 82.2 Revise Program Strategies

Conclusions: McGregor recommended review of all existing program strategies in line with such principles as concentrating on highest risk pests. The Evaluation Task Force recommended that strategies receive constant reviews supported by research in order to make those strategies more effective. The Agency implemented the recommendation but it still remains valid inasmuch as the need for research is an ongoing need (See Section 12).

#### 82.3 Monitor Customs Baggage Seizures

Conclusions: While the McGregor Report recommended the strategy of PPQ monitoring all contraband seizures by Customs in passenger baggage and the Evaluation Task Force, in effect, agreed in its recommendations (1), Customs has begun to inspect less and less passenger baggage. This trend has forced PPQ to inspect more and more baggage for nonpermissible agricultural products. Hence, the McGregor recommendation that PPQ apply the Customs fine procedure for false declaration (3) is no longer valid inasmuch as the Agency now has its own civil penalty authority.

#### 82.4 Eliminate Border Inspection of Passenger Vehicles

Conclusions: Speculating that the United States probably has most of the major pests found in Mexico, the McGregor Report proposed that Mexican border inspection of passenger vehicles be discontinued. The Evaluation Task Force disagreed and proposed continued secondary baggage inspection (1), emphasis on inspection of vehicles and baggage from the interior of Mexico, (2) and independence of inspectors inspecting vehicles considered to be high risk, (3) Pest conditions in, as well as traffic through, Mexico have subsequently justified the Task Force recommendations. No further action is required.

#### 82.5 Regulate Germ Plasm Traffic

Conclusions: The increasing movement of germplasm by scientists and other people has become a significant threat for the movement of exotic pests



(McGregor Report). While the Evaluation Task Force concurred with the McGregor Report, it indicated that adequate regulations for controlling such movement were available. However, it did make five recommendations for strengthening its regulatory procedures. Considerable effort has gone into executing the strengthened procedures. Increased attention should be given to communicating the seriousness of the problem to the scientific community (See Section 19 of this report).

#### 82.6 Develop Pan-American Quarantine

Conclusion: The North American Plant Protection Organization, recommended by both the McGregor Report and the Evaluation Task Force, was formalized in 1976. No further action on the recommendation is required.

#### 82.7 Information Storage, Retrieval, and Analysis System

Conclusions: While the McGregor Report did not mention the need for a PPQ computer network system, the need was recognized within the Agency and the Evaluation Task Force recommended the development of an integrated computerized information system. The Agency is making good progress toward the accomplishment of this recommendation. The need for completion was recognized by the FOSS Streamline paper and the Panel in Section 19 of this report.

#### 82.8 Greater Use of Compliance Agreements for Aircraft Clearance

Conclusions: A recommendation to actively pursue the application of compliance agreements for aircraft clearance on a selective basis, not included in the McGregor Report, was added by the Evaluation Task Force. Agreements with companies handling food waste and garbage were implemented in 1976. No further action on the recommendation is required.

#### 83.1 Review and Streamline Regulations

Conclusions: The McGregor Report recommended that a formalized and regular arrangement for discussion of key problems with industry should be established and that a complete review of all quarantine regulations should be undertaken. The Evaluation Task Force recommended no change in the present system of discussing regulations with industry and State regulatory officials, but that regular and complete reviews of regulations should be intensified as resources improve. The Panel believes that communication with regulated industries needs considerable improvement and that some regulations are outdated (See Sections 15 and 19). Thus, the McGregor recommendations are still valid. The Panel has recommended a mechanism whereby progress can be made on these needs (See Section 21).

#### 83.2 Establish Uniform Inspection Procedures

Conclusions: The McGregor Report was extreme in its findings that PPQ has no established procedures for inspection. However, the Evaluation Task Force agreed that there was need for more uniformity in application of inspection practices. Some specific guidelines were developed but the recommendations for a systematic review of procedures, in order to keep them current with changing times (3), has not been pursued in an organized way. Keeping manuals up-to-date as new knowledge is developed or as other conditions change is a difficult and challenging job which needs to be given priority attention.

#### 83.3 Employ Statistical Sampling

Conclusions: The need to develop statistical sampling procedures and for inspectors to apply them was indicated in the McGregor Report and was recommended by the Evaluation Task Force. The FOSS Streamline paper also

makes the same recommendation, which the Panel views as still being valid. No apparent progress has been made on the recommendation by the Agency. The Panel points out this need in Section 4 of this report.

#### 83.4 Use the New Detection and Control Devices

Conclusions: Both the McGregor Report and the Evaluation Task Force strongly recommended employing the use of new detection technology and devices. While some detection devices that were anticipated in 1973 and 1974 have not proven to be practical, for example, bioluminescence, the need for such technology continues (See Section 12).

#### 83.5 Pest Pathway Survival

Conclusions: The McGregor Report mentioned the need for research on the environmental conditions associated with the various pathways of entry of exotic pests and diseases, and the Evaluation Task Force recommended research on pathway survival of pests. While one study was made on the pathways of tropical fruit flies from Hawaii to California (R. Duncan Carter Report), essentially little progress has been made. We consider the recommendation to still be valid and believe that investigations should be undertaken in this important area (See Section 12).

#### 83.6 Establish Administrative Penalties

Conclusions: The Evaluation Task Force made a recommendation to establish civil (administrative) penalty provisions and increase criminal provisions from \$500 to \$1000. This recommendation has been achieved. In fact, criminal penalties were increased to \$5000.

General Conclusions: Plant Protection and Quarantine (PPQ) should continue the kind of evaluations initiated by The Emigrant Pests Task Force and continued by the 1974 APHIS Evaluation Task Force, in a process similar to that used in those studies, i.e., a task force of highly competent technical experts reviewed and made recommendations on each of the major components.

The Panel members are convinced that PPQ needs an interagency group which would be responsible for a continuing evaluation of the Agency's major activities. Findings of this internal group would be reviewed annually, or on call, by a highly qualified external advisory group. These two groups would provide PPQ with a sound technical base for solving problems and making decisions (See Section 21).



### 3. Public Awareness

Methods: The Panel heard from the PPQ staff and had discussions with State and Federal officials who were aware of the problems associated with making the public aware of the Agricultural Quarantine Inspection program. In addition, the Panel members visited many ports of entry, both domestic and foreign, and spent considerable time observing and reviewing the status of public awareness in those locations. Our perspective of the public awareness of AQI activities was augmented by our own travel experiences and discussions with "the public" (our next door neighbors, for example).

Findings: Through the dedication of its people, PPQ made a national effort to improve the efficiency of its port inspection program but has been frustrated that better results were not achieved. Despite its efforts, exotic pests continue to be found in the United States. Not only that, the tonnage of agricultural contraband carried by people entering the country continues to increase.

Airlines and port authorities have been indifferent about giving their full support to improving public awareness of AQI programs. Airlines and airports resist attempts by USDA to improve communications with the traveling public in airports and on planes. For example, PPQ wanted to use spot announcements during in-flight movies and to post signs in waiting areas and departure lounges, such as those being used in Canada and other countries, but such proposals have fallen on deaf ears. Even worse, some airline personnel are repeat violators who bring in prohibited items. We learned of one incident where airline personnel allegedly marketed prohibited items, shipping them from Hawaii to customers on the mainland.

Despite all the publicity about the outbreak of medfly in California and the citrus canker in Florida, it seems that airline companies, and especially airport authorities, remain indifferent to the need for agricultural quarantine.

Numerous approaches have been tried to improve AQI programs over the years. At this time x-ray scanners, detector dogs, and civilian penalties are being pursued vigorously as a solution. These approaches indicate that PPQ is trying to be realistic and recognizes that it cannot search 100 percent of passengers baggage. A good example of the problems associated with 100 percent inspection occurred on the California-Mexican border recently relative to drug enforcement. Government inspectors tried to search all the cars coming into the United States for illegal drugs. The delays resulted in high level protests by people on both sides of the border.

Panel members who visited New Zealand, Australia, and Japan were impressed with those countries' public awareness programs about agricultural quarantine. The intensity and visibility are in sharp contrast with that of PPQ in the United States.

The traveling public consists of vacationers, scientists, hobbyists, tourists, business people, immigrants, and students. All are potential pathways for pest entry.

A system for blocking pest entry pathways, such as travelers bringing prohibited items into the country, should be at least 90 percent effective. Inquires in this regard, brought forth an estimate that the present U.S. system is about 65 percent effective. PPQ's counterparts in New Zealand said they are intercepting about 94 percent of the prohibited products that travelers bring into the country; the Japanese say they intercept 80 to 90 percent. In contrast, an inspector in a third country that we visited expressed a belief that a large volume of prohibited items was undoubtedly getting through their system. He said that a study made in the 1970's showed that only 15 percent of the total was being intercepted.

In discussing the various ways that pests and diseases enter the U.S., the Panel was appraised of items that are prohibited from direct entry. Some commodities are imported into Canada and sold in markets there. Those commodities are allowed in Canada because some pests that they might harbour, while of concern to the United States, would not survive under Canadian weather conditions. For example, they are not as concerned as we are about the establishment of fruit fly pests. Once these products are sold in markets in Canada, obviously not the true country of origin, many are subsequently found in the United States. Some of these items found in the United States have contained exotic pests.

If the number of persons conducting port inspection was increased, more pest interceptions would be made. This has been historically true over the years. Those in charge of inspection certainly agree with this observation. However, they also admit that they do not know that more interceptions would reduce the number of establishments of exotic pests, nor reach a point when the number of interceptions would decrease.

In each port visited on the west coast of the United States, we were informed about the increase in potential pest risks caused by the immigration of people from the Pacific Rim in recent years. The Panel observed many of these people being intercepted while bringing prohibited items into the Country.

The U.S. Customs' Declaration Form used for travelers entering the U.S. is not specific about agricultural products being brought into the country. Other countries, Canada, for example, require travelers to state "yes" or "no" to questions about whether they possess animals, birds, meat, food containing meat, dairy products, plants, cuttings, vines, fruits, seeds, bulbs, roots, or soil. The U.S. Declaration Form needs to be revised so that these kinds of items will be specifically named.

Conclusions: There has been progress in the Agricultural Quarantine Inspection program, but the impacts have not been significant. Despite PPQ attempts to date to inform the traveling public about the dangers of bringing illegal agricultural products into the country, people continue to bring in dramatically large quantities of prohibited items. Even though the interception of pests at ports of entry is not a reliable index, by itself, relative to potential establishment of pests and diseases, at the present time there is no better way to determine quarantine effectiveness.

When one looks at the man hours expended on port inspections and notes that interceptions continue to increase, it is obvious that the system has not produced a method that will attain better cooperation from the traveling public. If there was greater awareness of the seriousness of the problem, one would expect a decline in agricultural interceptions at the ports. The use of detector dogs and electronic surveillance may increase this awareness inasmuch as they provide subtle methods of communicating with the public. It is uncertain which of the actions presently being taken by PPQ will be the most effective way to obtain public cooperation. PPQ needs to get organizations or persons experienced in overcoming public apathy to determine what the obstacles are that are blocking efforts to get better cooperation from travelers.

The efforts of New Zealand, Australia, and Japan to inform the public have been effective. There is more public awareness and the traveling public recognizes that their governments take foreign pest exclusion very seriously--indeed are very concerned about their countries agricultural resources. In contrast, the opposite appears to be true of those associated with tourism in the United States.

As a minimum, an aggressive information program in the U.S. would purchase space in airline magazines, brochures for passengers whose items are confiscated, pamphlets for caterers to put on food trays, films for outbound flights, public announcements in airport lounges, informative stickers for baggage when inspected, signs over AQI inspector booths, and others.

Everyone seems to agree that public awareness is an important factor in making the present port inspection program more effective. However, we were told that any efforts to attack the problem by spending more funds for that purpose is blocked by those who have control over resources. There have been various efforts which produced some worthwhile public awareness, that is, information techniques such as posters, articles in magazines, classroom information, and in placing brochures with travel agencies. These have not resulted in fewer pest interceptions nor altered long-term public awareness. The bottom line in determining their effectiveness is reduction in the number of interceptions, not how many of the different items were used.

There are many factors that impact on the large amounts of prohibited items coming into ports of entry. For example, some people try to "beat the system", some bring special delicacies from the homeland to their families, and some inadvertently bring prohibited items with them. Then, there are scientists, plant propagators, nurserymen, arboretum curators, etc., who bring in plants that cannot be obtained in the States. Of course, there are some who are law abiding and take the problem seriously.

When large numbers of ethnic groups immigrate to the United States, they establish a demand for products from their country of origin. Such products are then brought into the country as commercial shipments. PPQ needs to be sensitive to such ethnic population changes so it can monitor more closely for potential pests from these areas.

Some people feel that only legal actions will change the attitude of



persons who bring prohibited items into the U.S. Others say that fines currently being assessed must be increased significantly if exclusion programs are to be effective, although about \$700,000 has been collected to date. About one year has lapsed since PPQ started assessing fines onsite, so it may be too early to evaluate their effectiveness as a deterrent.

The Grace Commission Report (PPSSCC) did not mention the Agricultural Quarantine Inspection program when it reviewed Government programs, such as those of Customs and Immigration, at ports of entry. The Panel questioned whether that was an oversight or an indication that the importance of agricultural inspection program is not understood or appreciated by the public.

With all the information techniques available in this day and age, PPQ should be able to more effectively communicate its role in protecting the U.S. food and fiber supply, thus keeping costs to customers as low as possible and helping to minimize the use of pesticides. If a fruit fly gets established in California, it does not take long to cause as much crop damage as a widespread freeze. Most people understand that a freeze in a fruit-growing area means higher prices to the consumers. They also understand that pest eradication programs often require widespread use of pesticides in the environment.

Recommendations: (1) The Panel strongly recommends that a more aggressive information program be implemented. A nationwide program of the scope we envision will require significant resources to be effective. However, the cost would be insignificant compared to the costs of eradicating established infestations of exotic pests such as the medfly.

(2) PPQ should contract with an outside group of persons specially skilled in law, drug enforcement, or public relations to study the problem and recommend approaches that can be more effective in getting the cooperation of the traveling public in agricultural quarantine. Such an approach would provide a more valid basis for an aggressive public awareness program.

(3) The Secretary of Agriculture should bring the prestige of his position to bear on the importance of agricultural quarantine to the United States. We suggest that special efforts be made to reach all available media. Leaders of the agricultural industry should be solicited in this effort.

(4) The Secretary of Agriculture should meet with leading airport authorities and presidents of airline companies to communicate the critical need for agricultural quarantine, indicate his commitment to protect American agriculture from exotic pests, and seek their support.

(5) PPQ should develop a public symbol, similar to Smokey the Bear used by Forest Service, to help communicate the importance of agricultural quarantine to the traveling public. The Secretary of Agriculture would introduce the character to the Nation. The figure could be used by all media for regular dissemination of AQI information so it would not have a temporary impact. Smokey the Bear only applies to protection of our National Forests. The suggested symbol would have much broader responsibilities and even greater significance.

(6) USDA should obtain authorization which will permit PPQ to use all funds obtained from fines for violations in support of specific public awareness activities. We have special reference to buying space in airline magazines, TV and movie spots (particularly on outbound airline flights), and space in travel magazines as well as travel sections of major metropolitan newspapers.

## 4. Inspection

### 4.1 Introduction

Inspection is the heart of PPQ's system of excluding foreign pests from the United States. The average person might be inclined to wonder why PPQ does not inspect every single item for pests that comes into the Country. Infested items could be freed of pests, destroyed, or refused entry. While this simplistic approach is idealistically attractive and may have been theoretically possible "when America was young", it is totally unrealistic in 1985. The immense volume of people, luggage, mail, animals, commodities, planes, cars, trucks, and ships that enter the United States every day would require an army of inspectors, untold amounts of equipment, and so forth, to even attempt inspection of every item that enters the Country. In the absence of such resources, the process would cause massive and intolerable delays. The car-by-car search conducted under the direction of the Drug Enforcement Administration (DEA) on the California-Mexican border early in 1985 illustrated what would result. Cars were backed up for miles each day.

Even a perfect inspection system, as described above, would not produce a 100 percent effective net. Many pests are carried by wind, water, and wildlife as well as by drug smugglers and people who sneak into the Country.

While new techniques, such as x-rays and detector dogs, are important improvements in finding forbidden items in luggage and baggage, they cannot be substituted for inspection by the human eye for pests in otherwise permitted items. Not only are dogs and x-rays unable to determine the presence or absence of pests in otherwise permitted items, they are also unable to discriminate between permissible and forbidden animal and vegetable products. Hence, even though pineapples are items that are permitted entry to the mainland from Hawaii, dogs and x-rays "react" as if they were contraband. Also, it should be borne in mind that the human eye is not perfect. For example, microscopic pest organisms cannot be detected by the unaided eye. Further, after extended work, fatigue may result and efficiency is lessened.

There are problems involving technology of sampling commodities for inspection. This is obviously of concern to PPQ. The fundamental statistical procedures for sampling that relate to sample size, number of samples, total randomness, degree of infestation, confidence limits, and so forth, (all of which are familiar to most biological scientists) are not as clearly defined when a PPQ inspector is at work in a receiving warehouse on the docks or in an airport. The inspector is faced with doing a creditable job of inspection in a minimum amount of time so the product, which is usually perishable, may proceed to its destination. If a container is fully loaded, the inspector may very well have to sacrifice some of the randomness of sample. It is expensive to produce, harvest, pack, and ship a commodity to a U.S. port; therefore, an exporter usually sends only the highest quality product. It will usually have a very low level, if any, infestation of pests. Thus, the general rule of "the lower the infestation, the larger the sample and/or the greater number of samples required" may have to be compromised. Even further, with perhaps some compromise on randomness of sample and size and/or number of samples, some of the normally desired "confidence level" of the procedure may be compromised. At its worst, an inspection of this nature could probably be called cursory. A cursory inspection is not very sound biologically, though it may have some deterrent value. Moreover, if there is only token effectiveness, the public



may conclude that the real purpose is to provide jobs for bureaucrats.

Conclusions: Inspection is the heart of the process by which we attempt to exclude exotic pests, but it is not infallible. Further, it is not possible to inspect every item that enters the United States from other countries. Hence, foreign pests cannot be totally excluded from the United States. Even when the best and most extensive system that can be devised is efficiently utilized, there is still risk involved.

Recommendation: Acknowledge within PPQ that absolute protection against exotic pests moved by man is not a feasible objective. Revise the Agency mission statement accordingly. The agency must apply the best technology currently available, within budgetary restraints, to keep the risks of importation at the lowest possible level. This concept and approach should be made public knowledge.

## 4.2 Postal

Methods: The Panel questioned many people--representatives of grower groups as well as regulatory officials and scientists, both Federal and State--about what they believe to be major pathways for pest entry into the United States. The discussions included individuals from PPQ, Agricultural Research Service, California Department of Food and Agriculture, California County Agricultural Commissioners, Hawaii Department of Agriculture, University of Hawaii, and the U.S. Postal Service (USPS) in both Washington, DC, and in Hawaii as well as regulatory officials in Japan and New Zealand. In addition, we talked to such grower groups as the Western Growers Association and the Papaya Administrative Committee. We also looked at U.S. mail handling facilities (domestic and international), detector dogs at work in international mails, and commercial parcel delivery operations.

Findings: Upon discovery of contraband fruit, such as papaya in luggage, PPQ inspectors at the airport in Honolulu report that passengers often give the fruit to the person who brought them to the airport with instructions to "mail it to me". Verification that first class parcels are very real sources of pest accessibility to the mainland is illustrated by two examples. Postal workers in Denver, Colorado, found a leaking package which obviously contained plant material. Upon inspection, it was found to contain lychee fruit infested with fruit fly larvae. The most striking example occurred when postal workers found a leaking package in Orange County, California. The package contained fresh peppers infested with fly larvae. Upon identification, the insect was determined to be Dacus latifrons, commonly called the Malaysian fruit fly and not known at that time to occur anywhere in the United States. The property in Honolulu, which was listed as the return address on the mailing label, was examined and peppers growing there were found infested with the Malaysian fruit fly.

The R. Duncan Carter Committee Report, entitled Hawaiian Fruit Fly Pathways to the Mainland, stated that "the movement of uninspected parcels is the single most important pathway for fruit flies to reach the mainland". Something of the magnitude of the problem was illustrated in a 1983 report, prepared by PPQ inspectors in Hawaii, which estimated that about 5 percent of the first class parcels contained contraband. Expressed another way, they estimated that about 1,000 pounds of prohibited plant material is sent each day to the mainland by first class mail. In contrast to this, they confiscate about 30-40 pounds of prohibited plant material in hand baggage each day at the Honolulu airport.

Incidentally, Japanese regulatory officials say that they most fear parcel post packages as causes of breaks in their quarantine programs. While New Zealand has no domestic quarantine which would necessitate opening domestic mail, they agreed that mail packages are a considerable threat to that country's agricultural quarantine program. Noting that they can open any package which appears to be suspect, including diplomatic mail, when they conducted a 100 percent search, 20 percent of all mail coming from one country was found to contain undeclared plant and animal materials.

Domestic first class mail parcels were accessible to PPQ until 1976 when the Postal Service reassessed its operational policy and prohibited further inspection. We understand that subsequent efforts have been made by PPQ to reinstitute inspection but that the results have been negative. USPS representatives informed us that the practice was not only illegal but unconstitutional. Moreover, they feel that inspection is impractical and that PPQ should develop procedures and processes to work within USPS regulations "as have other agencies. Mail is only an instrumentality, people are the problem". They pointed out that packages containing vegetable matter must be labeled, may be opened at "terminal stations" (presumably with consent of the addressee) and that failure to comply with the regulation can result in a \$100 penalty. They doubted, however, that Federal attorneys would be interested in prosecuting offenders because of the small size of the penalty involved.

California County Agricultural Commissioners told us about their visit with a Western Regional Director for USPS. They informed him of the problems they believe are being caused by PPQ's inability to inspect first class mail. They also pointed out that they feel that the Domestic Mail Manual, Section 115.9, "Permissible Detention of Mail," Subsection .92, item b, which reads as follows, authorizes PPQ personnel to inspect mail which is reasonably suspected of containing prohibited plant material:

"Domestic mail from Hawaii or Puerto Rico. Without a search warrant, designated USDA personnel may open and inspect (but not read) the contents of mail reasonably suspected of containing plant material or plant pests, which has been mailed in Hawaii or Puerto Rico and is addressed to the United States mainland, either with the consent of the sender, or if the mail is unsealed. Such inspections may take place only in designated areas of the Hawaii or Puerto Rico post office, and only so long as the Federal plant quarantine of Hawaii or Puerto Rico remains in effect."

The Regional Director agreed to look into the legal aspects and promised to provide the County Agricultural Commissioners with written comments.

APHIS has petitioned the Department to seek legislative authority which would permit PPQ inspection of domestic first class mail from Hawaii and Puerto Rico to the mainland.

One of the big problems facing PPQ is restrictions on the manner by which pieces of mail can be determined to be "reasonably suspect" of containing prohibited material. The Honolulu Postmaster informed us that USPS policy precludes using dogs (and presumably x-rays) to routinely screen packages for contraband such as drugs. He indicated that drug control officials developed profiles for suspicious packages and then used dogs to determine "probable cause". After such procedures were developed, drug control officials found that the shipment of drugs through the mails was not as great a problem as they anticipated. He speculated that same situation might prevail for Agriculture.

While in California, the Panel observed a detector dog "working" international first class mail. Postal regulations permit inspection of international mail without warrant by Customs Service and PPQ cooperates



in that inspection. The dog appeared to be highly successful in determining which packages contained plant or animal materials. Therefore, we asked the Honolulu Postmaster if it would be possible to run a test using a dog in order to determine the approximate percentage of priority packages which contain plant material that are being mailed from Hawaii to the mainland. About 6,000 to 8,000 priority packages weighing over 1 pound are mailed from Honolulu to the mainland each day. The Postmaster seemed amenable to conducting such a test but indicated that it would have to be cleared with USPS leaders in Washington.

We later learned that PPQ has considered the feasibility of such a test but that, in addition to having to secure USPS approval, cost and/or time considerations have been significant. Trained dogs being brought from the mainland to Hawaii would have to remain in quarantine for several months. They could, however, be used in a test if kept muzzled but this could quite conceivably have an adverse affect on their performance. The other alternative is to purchase and train dogs locally although this would involve additional time and costs for both animal procurement as well as training.

Conclusions: Everyone with whom we talked voiced a strong opinion that first class mail, vis-a-vis priority packages, is a primary pathway between Hawaii and Puerto Rico and the mainland. We are also convinced that first class mail parcels are a major weakness in PPQ's defense of the agricultural resources of our country. Moreover, first class mail appears to be a likely source of future infestations of fruit flies on the mainland, particularly on the west coast. Data from a test using a detector dog in the Post Office in Honolulu would be invaluable in (1) making and supporting a case for a change in USPS policy, or (2) seeking legislative authority for inspection by PPQ, or (3) determining that first class mail is not a major pathway for mainland infestation by pests from Hawaii or Puerto Rico. The problem is too great to await the outcome of USDA/USPS discussions and negotiations before starting the long process of purchase and training detector dogs. If arrangements can not be made for their use in relation to first class mail, they can be used in baggage inspection at the Honolulu airport.

If the public is abusing first class mail as a way of sending prohibited plant and/or animal materials to the mainland, private parcel services, such as that supplied by United Parcel Service, are also probably being abused. PPQ has authority to inspect packages in such channels, but inspection is not done on a routine basis. Detector dogs could also be used to routinely monitor private parcel service packages when first brought to the company for shipment, during the sorting process, or while awaiting shipment.

The \$100 penalty for violation of postal regulations against mailing perishable plant and animal materials is not being enforced. Presumably the "small" nature of the current penalty precludes interest of Federal attorneys in prosecuting violations. USDA should petition USPS to seek a change in legislation which would measurably increase the penalty and make it commensurate with the potential significance of the crime.

The Panel received several suggestions that APHIS should seek legislative authorization which would permit PPQ to inspect (but not read) domestic first class mail. If PPQ has to eventually seek such

authority, California Department of Food and Agriculture officials suggested that it be limited only to domestic first class mail parcels weighing over 1 pound. We believe that the suggestion is a good one, one that respects and honors privacy of the mails but still recognizes the importance and value of excluding plant and animal pests from mainland agriculture. It seems almost inevitable that USPS would oppose legislation to permit any PPQ inspection of first class mail. Even if the Administration (OMB) is willing to propose such legislation, before asking the Congress to "choose up sides" on the issue of inspection of mail by Agriculture, we believe that the Secretary should first make a personal effort to resolve the problem.

We are aware of and support the intent of recommendations made by FOSS ("Plan to Streamline and Stabilize Agriculture Quarantine Inspection Operations") concerning ways to resolve problems associated with first class mail. However, we are firmly convinced that the first new attempt to achieve resolution must be initiated by the Secretary of Agriculture.

Recommendations: (1) The Panel strongly recommends that the Office of the Secretary of Agriculture promptly negotiate with the Postmaster General to resolve the problem of domestic first class mail as a pathway for pests from Hawaii and Puerto Rico to the mainland. If negotiations with USPS fail to resolve the problem, the USDA should immediately initiate action to obtain legislation to correct this major weakness in its protection of U.S. agricultural resources. Based on our various discussions, we believe that the Secretary would have considerable industry support in pursuing this recommendation. We are firmly convinced that the inability to inspect domestic first class packages is a critical weakness in PPQ's operational responsibility, one that demands immediate attention. Failure to correct the situation can, and probably will, eventually result in the establishment of a pest or disease that will cause immeasurable damage to U.S. agriculture.

(2) APHIS should arrange with USPS headquarters to permit the Honolulu Post Office to cooperate in a test whereby a detector dog can be used to identify the volume of first class mail which may contain contraband plant and animal products.

(3) The Secretary of Agriculture should petition the Postmaster General to have all postal clerks, but especially those in Hawaii and Puerto Rico, be more diligent about inquiring about the contents of packages being mailed and make sure that Post Office patrons understand the law against mailing prohibited plant and animal products.

### 4.3 Baggage

The problems associated with baggage, as a pathway for plant and animal pests and diseases, come in assorted sizes and complexities. They range from questions concerning the significance of the pathway and the need for and the efficacy of inspection to the need for more effective exclusion tools. The problems also vary with the locale, i.e., airports, marine ports, the Canadian and Mexican borders and Hawaii and Puerto Rico. Complicating the more or less technical considerations are the pressures from the airlines, travel agencies, politicians, and the traveling public to streamline air passenger processing. Thus, baggage inspection, particularly at U.S. international airports, is under appreciable stress.

Methods: Travel by the Panel to investigate the various issues raised by the Assistant Secretary for Marketing and Inspection Services in his charge to the Panel facilitated its study of airport baggage inspection in this Country and abroad. We not only observed the various inspection systems in operation but were subjected to the procedures ourselves. This experience included exposure to the Canadian PIL (Enhanced Primary Inspection Line) system at Ottawa and Vancouver. At the latter location, observation of preclearance of travelers destined for the United States was also possible. There was opportunity at San Francisco to watch a detector dog at work. Another promising tool, the x-ray scanner, was seen in use in Hawaii and Puerto Rico. Some possible improvements in scanner imagery were observed at an ARS laboratory in Albany, California. A team from the Panel discussed baggage inspection with Japanese and New Zealand officials, while another team experienced the Red-Door/Green-Door system of processing airline passengers at several points in Western Europe. The latter system was discussed with FAO officials and regulatory officials of several countries in the European Economic Community (EEC). One team reviewed the inspection process at various ports of entry along the U.S.-Mexico border.

Findings: Baggage inspection has been a contentious subject among State and Federal plant pest regulators for decades with the State officials demanding "100 percent baggage inspection" and seldom, if ever, getting it. At one point, PPQ tried but realized that with current techniques it would not be feasible. As the volume of air travel has grown and as traffic across the Canadian and Mexican borders has swelled, the inspection system has been increasingly compromised to accommodate budget constraints and to expedite traveler processing.

Is passengers' baggage an important pathway for the entry and establishment of plant pests and animal diseases? The Panel found that the reaction to this question varied from that of little concern in the EEC to the threat of a \$50,000 fine for bringing agricultural contraband into Australia. New Zealand is similarly concerned, works hard at public awareness, and provides "amnesty bins" for passenger disposal of agricultural contraband prior to inspection. Japan looks upon baggage as worthy of attention at ports of entry, second only to ship and air cargo as a potential pathway.

The PPQ response to the baggage question is time-honored and well summarized in a internal memorandum of December 27, 1984, as follows: "Fruits and vegetables brought by passengers have long yielded the



greatest number of quarantine pest interceptions, considerable more interceptions than those from commercial shipments. We consider the likelihood of pest establishment greater with baggage importations than with commercial importations. These fruits and vegetables often come from backyard, non-commercial production where little or no pest control or management is practiced. In addition, PPQ often releases baggage importations of fruits and vegetables based on evidence of origin much less certain than that accompanying commercial shipments."

An equally valid answer is that passenger baggage is an important pathway for entry of pests but no one knows its relationship to the establishment of plant pests and animal diseases despite the hundreds of thousands of quarantined material interceptions and tens of thousands of actionable pests detected each year at U.S. ports of entry. These interceptions result in the annual publication of an impressive list of intercepted pests even though the inspection process is only 65% effective, according to a PPQ staff estimate.

Regardless of the above data and data presented in the following table, there have been few proven instances of traveler entry and subsequent establishment of an exotic plant pest. One of the more notable of these resulted in the temporary establishment of the Giant African snail in Florida (1966 to 1975).

AQI COMPARATIVE INFORMATION  
1975 through 1984

YEAR	AQI STAFF <sup>1</sup> YEARS	EXOTIC ESTAB	PERSONS ENTERED <sup>2</sup> (000's)	CARGO ENTERED (000's)	QUARANTINE MAT. INTERCEPTIONS BAGG OTHER		PPQ ACTION. PEST INTERCEPTS BAGG OTHER	
1975	790*	2	256,791	3,074	455,000	334,000	5,094	2,857
1976	805*	2	271,461	3,325	483,000	312,000	7,861	5,790
1977	808*	2	264,845	3,725	351,000	488,000	6,934	5,516
1978	810*	1	275,460	4,081	703,000	274,000	8,378	7,032
1979	812*	0	271,946	4,448	1,190,000	266,000	9,845	8,559
1980	830*	4	299,026	4,434	1,049,000	286,000	14,605	9,525
1981	838	2	316,577	4,641	946,000	501,000	16,586	10,134
1982	886	0	300,325	4,753	1,115,300	328,300	24,526	11,340
1983	913	2	285,683	5,369	1,116,200	447,300	26,673	13,514
1984	881	4	287,937	6,421	1,010,300	523,100	21,080	13,867

\*Estimated

<sup>1</sup> PPQ Officers GS 436 5-11

<sup>2</sup> Includes Mexican and Canadian borders

While the data in the foregoing table illustrate pest introduction potential, they do not evaluate pest risk and therefore, are primarily a tabulation of work accomplishment.

The report by McGregor and others dismissed the value of baggage inspection as an exclusion tool. The senior author reasserted this position in an interview in December, 1984. He questioned whether many pests arriving in baggage ever end up in a biological niche which would permit survival and increase. He did give baggage inspection some value as a deterrent. However, its worth as such remains undetermined.

The pressures on the baggage inspection system, especially foreign flight baggage are, in the Panel's judgment, likely to lead to its demise even as a deterrent unless baggage can be proven to be a significant pathway leading to pest establishment or carried out in such a manner that it is not an obstacle to increasing tourism. This concern is shared by a surprising number of the PPQ staff interviewed in the field and certainly is not news to administrative personnel in the Agency. The pressures as the Panel sees them are:

1. The sheer volume of international travelers, as well as those from Hawaii and Puerto Rico, stacked up against relatively constant inspectional resources. Port AQI personnel are acutely aware of this and recognize that an inspection staff adequate to inspect 100 percent is unlikely. They are also aware of the compromises that Customs has already made, such as the "modified European Red-Door/Green-Door system" of processing travelers which is now appearing at some U.S. ports of entry.
2. The establishment of the U.S. Travel and Tourism Administration with a Cabinet-level Council to promote foreign visitations. This body is discussing the streamlining of entry procedures. Additionally, the Panel was advised that several international organizations are looking at trade and tourism barriers. Pressure on the inspection system from such sources parallels increases in the trade deficit.
3. The U.S. Customs Service is an indispensable ingredient in the system, particularly at ports not manned full time by AQI. Yet, Customs is becoming less enthusiastic about performing AQI activities, probably due primarily to hassling received from passengers and airlines. However, the spirit of cooperation varies from port to port depending upon the personalities of personnel involved.
4. Some airline crews, baggage handling, and other airport personnel do not take pest exclusion seriously, thus providing additional stress on an already overburdened PPQ inspection staff.
5. A representative of the Air Transport Association of America (ATAA) told the Panel that a cooperative film on PPQ and Customs requirements is being made for showing in international passenger waiting lounges. This is a surprising development since the airlines have been less than enthusiastic about PPQ public awareness programs. For example, local airport authorities, reportedly with airlines concurrence, have refused to permit signs to be placed in waiting lounges to inform passengers about pest exclusion and its importance.
6. The Grace Commission in its report on cost control in government almost ignored APHIS as a supplier of inspection services at ports of entry when considering consolidation schemes. Moreover, the importance

of APHIS in protecting the food and fiber supply of the United States did not appear to be a factor in development of the consolidation options presented by the Commission. On the other hand, these were proposed by ATAA, an organization presumably very familiar with PPQ, its mission and its goals.

Those who question the value of baggage inspection as an exclusion tool should take the opportunity, as the Panel did, to observe the processing of incoming travelers at such airports as San Francisco, Los Angeles, and Honolulu. Here the Western Pacific Rim "ethnic bridge" can be seen in operation. This is the result of the immigration of the thousands of people from that area into the United States during the last 10 years (Philippines 380,150; Vietnam 366,411; Korea 290,231). Those who have achieved some success in their adopted country are now returning to visit relatives and friends. These visits result in the accumulation of surprising quantities of native fruits and meat products for the return trip. Much of the plant produce is infested with insects and diseases. The meat products are suspect. If allowed to proceed to destination, possibly none of the pests would find a hospitable habitat but definitive assurance to dismiss this as a pathway is lacking.

In Hawaii and Puerto Rico, the Panel studied airport predeparture baggage inspection as a protection to mainland agriculture. Despite some port inspection security problems, a need for a better public awareness effort and the need for additional personnel, this program appears to be quite effective. Its effectiveness, however, is believed to be substantially compromised by shipments of fruits (particularly papaya and mangoes) by first class mail and through private package services. Predeparture clearance of passengers in Puerto Rico and Hawaii cost \$6.8 million or 18% of the AQI budget in 1983. One-third of this activity occurred in Puerto Rico and two-thirds in Hawaii. The fruit fly infestations that have occurred and continue to occur in Florida and California may call into question the value of the expenditure. On the other hand, infestations of exotic pests are very expensive to eradicate or, that failing, to control, as has recently been demonstrated in both states.

Some significant and comparatively recent improvements in inspection technology are, or show promise of, countering some of the stress on the system. These are passenger profiling, detector dogs and the use of x-ray scanners.

Profiling has substantially improved the inspector's ability to identify high risk individuals disembarking from foreign flights. Application of the profiling technique by PPQ and Customs inspectors roving about air terminal baggage areas has been particularly effective.

The use of passively trained dogs to detect contraband in baggage is being tried. This past winter an evaluation of the effectiveness of this technique in comparison with the usual inspection process was conducted at the San Francisco and Los Angeles airports. The results showed that the dogs are more effective on some flights than others. Fortunately, they are most effective with the more difficult to profile individuals, e.g., those on flights from Western Europe. Contrarywise, on most Asian origin flights where a lot of passengers carry food, the dogs do not improve inspection success. However, such flights carry the more easily profiled individuals.



X-ray scanners at Puerto Rico and Hawaii have been found useful in predeparture clearance of passenger baggage. In Puerto Rico, both hand and pit baggage are scanned with a resulting 13 percent improvement in inspection efficiency. PPQ recently calculated that a similar performance in Hawaii would save \$1.5 million over 5 years.

In addition to improvements in inspection techniques, PPQ was granted authority in January 1983, to directly assess civil penalties against persons found to be carrying agricultural contraband in their baggage at ports of entry. From the start of the exercise of this authority through June 1985, assessed violations numbered 22,604 with fines amounting to \$639,625.

To improve the efficacy and efficiency of baggage inspection, PPQ is considering regulations to prohibit fresh fruits and vegetables in baggage unless accompanied by a phytosanitary certificate and other documentation of origin.

Conclusions: The increased efficiency in intercepting actionable pests during the past three years should be given recognition. The field staff should also be commended for positively accepting the reality of budget reductions and the necessity for accommodating an ever increasing work load through the use of passenger profiling and such aids as x-ray scanners and detector dogs. These two latter innovations, now being introduced at some airports, have had a positive effect on both the inspection staff and the public. Hopefully, the judicious application of civil penalties will also lead to positive reaction from both the public and the PPQ staff. The pending prohibition on carrying fresh fruits and vegetables in baggage will help passengers with compliance and expedite baggage processing.

The projected increase in foreign air passenger numbers in the years immediately ahead (42.8 million by 1990) is frightening in terms of the increased potential for the introduction of exotic plant and animal pests and diseases. The numbers also emphasize the urgency of refining and implementing improved methods of effectively clearing foreign arrivals at our international airports. PPQ needs to take the lead in initiating and maintaining a worldwide exchange of information on the effectiveness of baggage inspection. PPQ needs to be more aggressive in encouraging research institutions to look for other possible means of contraband detection. Likewise, it is necessary that every effort be made to develop meaningful documentation of the potential of passenger baggage as a pathway leading to the establishment of exotic pests. If such an effort should give negative results, a shift of resources will undoubtedly be required both within the baggage inspection activity and to other AQI inspection areas. However, until research proves otherwise, the number of exotic pest and disease interceptions is the best index available to determine pathways that lead to establishment--situations to which the Agency should give the highest priority. Therefore, baggage inspection must continue to receive high priority consideration by PPQ.

The recent air hostage crisis and the explosion of the Air India airliner has highlighted the need to search all passenger baggage. Since PPQ has always had mutual interest in 100 percent inspection, it should keep current with developments in this area.

PPQ needs to investigate the potential for predeparture clearance of airline passenger baggage, similar to that observed in Hawaii and Puerto Rico, at selected foreign international airports. The Panel envisions such use in locations that are traditionally the origin of large numbers of passengers carrying prohibited materials and products on direct flights to the U.S.

Recommendations: (1) The Panel recommends that the passenger baggage inspection program be continued.

(2) The Secretary of Agriculture should insure that PPQ is an active participant in the development of new airport and airline security procedures currently being studied by the Presidential Task Force which was appointed in July 1985.

(3) PPQ should make maximum use of profiling detector dogs and x-ray scanners. The Panel supports the recent FOSS recommendation in this regard.

(4) PPQ should contract with an appropriate research institution to make a determination of the importance of passenger baggage as a pathway leading to the establishment of plant and animal pests and diseases. This is not a simple task and one that may not have research appeal. If this proves to be the case, we suggest that PPQ assign the problem to its very capable methods development staff for solution.

(5) The Panel recommends that fresh fruits and vegetables in passenger baggage be prohibited unless accompanied by a phytosanitary certificate and other documentation of origin.

#### 4.4 Cargo

Methods: Members of the Panel questioned PPQ and State regulatory personnel at Washington, DC; Charlestown, SC; Gainesville and Miami, FL; Brownsville and McAllen, TX, and adjoining Hidalgo, MX, El Paso, TX, and adjoining Juarez, MX; Douglas, AZ, and adjoining Agua Prieta, MX; Ciudad Obregon, Kino, Hermasillo, Guaymas, Carbo, Benjamin Hill, and Sonora, MX; Los Angeles, Sacramento, San Francisco, Oakland and San Diego, CA, and adjoining Tijuana, MX; Blaine, WA; Honolulu, HI; Baltimore, MD; Hoboken, NJ; San Juan, PR; and Vancouver, Canada. We also talked to people representing various industry groups.

Findings: Cargo inspection and clearance are the main operations of AQI at land and marine ports of entry. Under current PPQ policy, they are secondary operations at airports. At border crossing stations, the flow of passenger automobiles seems to take the most time, but we saw cargo (trucks) in volume at a number of points e.g., an average of 200 per day at Hidalgo.

Virtually, all maritime cargo now moves in containers. Inspection of cargo in containers is drastically different from that used for bulk cargo. Only a few agricultural products still move as bulk shipments; wheat and rice are examples.

The use of containers has increased the use of crates, cases, pallets, and dunnage constructed of materials which have been found to harbor more and different types of plant pests than those used for bulk cargo. Before containerization, most imported cargo was delivered within a reasonable radius of the ports of entry. There has been a concurrent restructuring and relocation of industrial areas. Many of these new locations are in agricultural production areas or near forest areas, so the possibilities for establishment of pests hitchhiking in containerized cargo has greatly increased. // ?

This drastic change in cargo handling required PPQ to respond with attempts at an ordered procedure to insure adequate inspection and/or treatment of containers. Containers that cannot be adequately inspected at the port may be unloaded for inspection. This is an expensive and time consuming procedure, slowing the movement of cargo. Cursory "tail gate inspections" prior to release may be the result. An APHIS study group recorded a decline in the number of contaminated containers inspected at two inland locations in the Southeastern Region with numbers dropping from 2007, of which 95 (4.7 percent) required treatment in FY78, to 404 of which 6 (1.47 percent) required treatment in FY80. These numbers may also indicate a decreasing number of containers sent inland for inspection which would appear to mean that more of the containers were released at the ports of entry.

Panel members observed the handling of immense numbers of containers at ports mentioned above. PPQ inspectors handling containers were highly motivated but realized that they could inspect only a small percentage, and many of those were "tail gate" inspections. All seemed to feel that they could select "high risk" containers. All agreed that dirt and other bits of materials other than cargo posed a danger. The Panel members saw empty container washing at one of the major shipping lines



*Probably  
before loading out  
around or earlier  
empties  
overseas*

at Oakland, California. It seemed to be well done and thorough, but we have no way of knowing how widespread this cleaning procedure is in the shipping industry.

One of the problems called to our attention was the coordination between Customs and PPQ. Personnel at the Charlestown, South Carolina, port seemed to have a good working relationship. The port has a manifest computer with display terminals in PPQ, Customs, and brokers/shippers offices. PPQ personnel can mark any items on a manifest that they wish to inspect. The items are then held until are released by PPQ. We were told that this system is being studied for possible use in other ports and that some computer systems installed by Customs do not have the flexibility of the Charlestown system. Inasmuch as several computer systems are used by Customs at various ports, it is trying to work with whatever system is available. In addition, we understand that the Customs services of U.S. and Canada are now moving toward the worldwide system of customs manifest classification used by most other countries.

The first step in clearing cargo is to identify its existence, content, and location. When the vessel arrives in port, the PPQ officer reviews the manifest and places on hold cargo which is identified as requiring inspection. In some cases, only the exterior of the containers is inspected. Cargo requiring more thorough inspection must be held by the carrier firm and the PPQ officer notified. There are difficulties in gaining access to the cargo. Over half of all cargo arriving in the U.S., and 95 percent or more at some ports, arrives in large containers which are usually loaded to capacity. It is virtually impossible to adequately inspect the contents of such containers. Many such containers are inspected by opening the door and examining what can be seen without removing the cargo. This is obviously the cursory inspection commonly called a "tail gate inspection".

An alternative is to seal the container and send it to its final destination for inspection (devanning inspection). This can be done only if inspectors are available at destination points.

Cargo is received at nearly all international airports where it is subject to agricultural inspection. We were told that an average of 2 percent of a cargo unit is inspected. The inspectors we observed clearing air cargo seemed highly efficient and knowledgeable about the kinds of cargo, the shippers and its point of origin, but no one mentioned the effectiveness of such an inspection.

All trucks carrying agricultural cargo through land border stations must enter a special inspection area. We had the opportunity to observe this process and also saw treatment of infested cargo. Inspectors were highly motivated but are overwhelmed by the volumes being moved.

1. Inspection of cargo has to be poor.

We were told that 75 percent of all propagative plant material entering the U.S. moves through the Miami station. This is, of course, high risk material since the living host is the item of traffic. In 1981, over 160 million plants were cleared for entry. In 1984, Miami cleared 181 million plants out of a 200 million national total. In addition, the Miami station cleared 849.5 million stems of cut flowers.

We observed the inspection of rail cars at the El Paso-Juarez border. The agricultural inspection must be literally carried out in the midst of illegal immigrants trying to enter the United States. For security reasons, the inspection of rail cars is now done on the U.S. side rather than the Mexican side. A primary concern was the contamination of these cars with wheat that might be infected with Karnal bunt, with animals or plants and animal products which could carry disease. The system seemed to be efficient, and the rail lines seemed cooperative; but the efficiency is almost entirely dependent on the inspector.

Conclusions: PPQ faces a most difficult situation in the sampling and inspection of containerized cargo. Containerized cargo and enclosed truck cargo cannot be adequately inspected without unloading. The current system is inadequate and will bring discredit to PPQ if adequate inspection cannot be done. The present system of handling containerized cargo which cannot be adequately inspected at ports of entry could be inspected at destination by State employees at Federal expense through cooperative agreements.

Recommendations: (1) PPQ should develop a more creditable and realistic system of container and enclosed truck cargo inspection.

(2) PPQ should require a manifest control system at all ports such as is now in place in Charlestown, South Carolina. The PPQ inspector must have advance information of the manifest and the ability to mark and hold cargo.

?  
? .  
*No official recommendation  
to enter into coop agreements  
with States to do more interior  
inspections. ??*

#### 4.5 Ship Stores and Garbage

The immediate boarding of maritime ships upon arrival at one of the United States ports of entry has always been considered a firstline of defense to prevent pests and diseases of plants and animals from being introduced into our Country.

Methods: Maritime operations were observed as a potential pathway for foreign pests and diseases. Contacts were made with shipping company representatives, those in charge of inspection, importers, brokers, and grower organizations involved in the import and export of commodities.

Findings: A continuous problem over the years has existed relative to the sealing of compartments where food is stored on ships while they are in U.S. ports. Inspectors on numerous occasions have found violations of seals used on ship stores compartments as well as improper disposal of garbage. The enforcement to-date has not been effective, reflecting indifference to the importance of the agricultural requirements by those responsible among the shipping companies.

PPQ has recognized the significance of this weakness and on numerous occasions has tried to strengthen this phase of its operations. A continuing effort to close the gap by amending the ship boarding guidelines became effective July 1, 1985. The guidelines require the sealing of compartments containing fruit fly host material observed in southern ports of the United States. Violators will be assessed penalty fines immediately, as is now being done with passengers who bring prohibited items into ports of entry. More freedom/authority for application of the guidelines will be given to PPQ officers when attempting to enforce agricultural regulations at the local level. Many persons and organizations contacted expressed alarm about the weakness of inspection of ship stores, including disposal of garbage.

Numerous PPQ officers have complained about not being notified in advance about the arrival of foreign vessels so that proper planning for inspection and sealing can be implemented. The guidelines which became effective July 1, 1985, require incoming shippers to notify PPQ of the estimated time of ship arrivals and where the docking will occur. ?

Conclusions: PPQ has been extremely tolerant over the years in attempting to carry out its responsibilities under present authority. It has had to rely on U.S. Customs laws as enforcing acts. Agricultural regulations may have been interpreted by the shipping industry as secondary to the importance of Custom regulations and may have been the reason that Agriculture has not been given the same degree of cooperation as that given Customs.

Agriculture requirements must be enforceable if PPQ inspectors are to take maximum action to prevent exotic pests and diseases from becoming established. These pathways must be effectively plugged. The problems relative to food supplies for ship crews and the proper disposal of garbage while foreign ships are in U.S. ports are of long standing and need immediate solution.

In about a year, the USDA internal group (ITAT, See Section 21) should



review the effectiveness of the new guidelines which became effective on July 1, 1985. If deficiencies remain, PPQ should propose legislation to give USDA the same authority that U.S. Customs now has relative to ships entering U.S. ports, i.e., shippers must directly clear with U.S. Department of Agriculture before entering and leaving ports, and be held accountable through fines and penalties the same as applied by U.S. Customs.

#### 4.6 Military

The armed forces of the United States are dispersed throughout the world. There is a constant movement of individuals and families as well as entire military units into and out of the Country. The return of these people and associated equipment to the United States constitutes a potential pathway for the entry of exotic pests.

Methods: The Panel visited and had extensive discussions with CINCPAC in Honolulu as well as various PPQ personnel, both inside and outside of the United States, State regulatory people, and others with knowledge of military activities that could result in the importation of exotic pests into the Country.

Findings: The U.S. armed forces maintain a close working relationship with PPQ and exhibit an unusual consciousness about the potential of their activities resulting in the importation of exotic pests. Not only do they seek PPQ help in inspection and other procedures before bringing equipment, etc., back to the United States from foreign locations, on their own initiative they also make extensive efforts to carry out appropriate "cleaning procedures" prior to returning equipment to U.S. soil. Further, military personnel and their dependents are advised and trained on proper procedures about bringing agricultural products back into the Country. While a few concerns were expressed to us that military operations could be responsible for importation of exotic pests, particularly in Hawaii, we did not hear of a single specific instance of pest importation that was blamed on the armed forces.

Conclusions: Activities of the U.S. armed forces have an important potential for bringing exotic pests into the United States. There is an exceptional consciousness of this potential in the military organizations, and they work closely with PPQ to prevent the importation of pests. While there is some apprehension among some State regulatory people that the military may be responsible for bringing pests into the Country, we did not learn of a single case where this has occurred.

Because of the frequent turnover of commands, the movement of military personnel, and their equipment, PPQ needs to continue monitoring and participating in their prevention programs. This potential pathway should always have a high priority with PPQ.

## 5. Preclearance

Preclearance, as used in this report, means inspection or treatment of commodities by, or under the supervision of, PPQ inspectors in some other country prior to shipment to the United States. The Panel encountered so many varied uses of the word preclearance that we felt it was necessary to define the term as we have used it. Costs of preclearance, including salaries, are paid by the exporting country or an exporter's organization. The precleared items are labeled as having met U.S. requirements and are permitted entry into the United States without further inspection; however, all precleared commodities are subject to monitoring inspection upon entry into the United States. Provisions for preclearance are usually made through a cooperative agreement between PPQ and the foreign government and/or an exporting organization.

Methods: We discussed the preclearance procedure in detail with PPQ people in Hyattsville, with State regulatory people, and members of industry. We also had extensive discussions with PPQ officials, regulatory personnel, members of industry, and growers in Chile, The Netherlands, Denmark, Japan, and New Zealand. We reviewed numerous publications that impinged in one way or another on the preclearance process. The inspection and clearance process was observed first-hand in The Netherlands, Chile, Hawaii, Haiti, and New Zealand.

Findings: The preclearance system has advantages for the United States over the traditional one of inspection and clearance of products after arrival in the United States. (1) The inspection process, during the loading of containers is more simple, and in general, should be more efficient than the process of inspection upon arrival in U.S. ports. Truly random samples of any size and number can be selected as commodities are being loaded or being processed prior to loading for shipment. This gives the inspector greater assurance that samples are representative of the entire container load and that the confidence level of the results of inspection is high. (2) In the case of shipment by sea in refrigerated ships, the efficiency of "finds" should be higher in preclearance inspection. Pests, especially insects, on products kept in a cold compartment of a refrigerated ship for several days are inactive and more difficult for an inspector to see. This would not be true when products are not refrigerated in transit, as in the case of transport by air. (3) Preclearance should assure that cleaner products arrive at U.S. ports of entry. A foreign country, in order to meet U.S. requirements, will likely require its producers to do a good job of pest control prior to delivering the commodities for inspection. This reduces the risk for escapes through inspection, both in-country and upon "double-checking" (monitoring) at U.S. ports. (4) By virtue of having been precleared prior to arrival, the time required for products to leave ports of importation and reach consumer markets is reduced. Consequently, perishable products, such as fresh fruits and vegetables, should be in better condition when they reach the United States consumer. (5) The costs of preclearance inspection and/or treatment are borne by the exporting country or the exporter himself. While some "double-checking" inspection is and should be done in U.S. ports on precleared cargo, it is obvious that the overall inspection system will be more efficient.



The preclearance system also has some disadvantages. (1) Some U.S. growers and members of industry are concerned that preclearance may provide an undue advantage to foreign producers over producers of the same products in the United States. (2) The increased amounts of imports resulting from preclearance procedures could or may add to the U.S. imbalance in foreign trade. (3) When precleared cargo enters the United States and is subsequently found to not meet U.S. requirements, severe problems can occur. This occurred during the past year when two large shipments of bulbs were found to have soil on them when they arrived in the receiving State. (4) While the foreign country pays the actual costs of preclearance operations, there are other associated costs that are paid by the United States. Training of PPQ inspectors, activities of International Programs personnel that are related to preclearance, and the administrative costs in the United States are examples. (5) Products, such as those that are hosts of tropical fruit flies, that have been inspected and/or treated in-country and certified as meeting U.S. requirements, may still develop infestations enroute to the United States. This problem would probably occur more in commodities moved by surface ship or truck than by aircraft. Vessels enroute to the United States frequently make stops in other ports before arriving on our shores. When holds are left open for several hours in fruit fly infested areas, for example, the products in the hold are subject to infestation. The same problem could occur with other highly mobile pests. Also, (6) cargo spaces in ships and aircraft that are improperly cleared of pests before they are loaded can create a problem. Further, (7) the storing of precleared commodities in the same hold with those requiring inspection on arrival could result in re-infestation of the precleared materials; (8) Preclearance operations are causing some problems within PPQ itself. Trained inspectors are pulled from U.S. ports and/or border operations and assigned to preclearance work for several months in a foreign country. While this procedure can be a very beneficial experience to the inspector as a training program and to broaden his experience, it inevitably results in a depleted work force and consequent loss in efficiency of domestic inspection work. There is some indication that there is a resultant loss in morale among inspectors who, for whatever reason, do not get to participate in these temporary foreign assignments. (9) It has even been suggested that since the exporter pays PPQ directly for all attendant costs for preclearance, there is a possible conflict of interest. (10) Another concern that has been expressed to us is that there is a tendency to employ non-U.S. nationals in connection with preclearance inspection work. It has been said that "this is like leaving the fox in charge of the henhouse". The inference is, of course, that the reliability of non-U.S. nationals leaves something to be desired.

There is another problem that has been brought to the attention of the Panel. This has to do with countries having a preclearance agreement with the United States importing commodities from a third country and re-exporting these commodities to the United States under the preclearance agreement. Even if such commodities are labeled as being re-exported there may still be an increase in pest risk for U.S. agriculture: (a) Commodities from the third country may very well be subjected to pests that are different from those endemic to the country

with the preclearance agreement; (b) under preclearance inspection the inspectors are primarily looking for pests or diseases that are known to be endemic in the country with the preclearance inspection; (c) when one considers that even the best inspection procedure is done through a sampling technique, not 100 percent inspection, the probability of overlooking an unexpected pest could possibly be enhanced to an even greater degree; (d) commodities from a country without a preclearance agreement are more suspect. If such commodities are produced for export, why does that country not have a preclearance agreement with PPQ? Is it because that country's products cannot meet U.S. requirements?

Conclusions: There are advantages and disadvantages to the preclearance system as currently operated. It seems to us that the epitome of an "inspection at origin" system would be one in which PPQ and the regulatory agency in a foreign country execute an agreement setting forth: (1) What the U.S. requirements are for importing various commodities; (2) that the foreign country regulatory agency would ensure and certify that products exported to the United States meet the U.S. requirements and PPQ would use personnel in International Programs to monitor the system; (3) that PPQ inspectors in the United States would monitor the commodities; and (4) that failure to meet U.S. requirements would result in cancellation of the agreement. Such a system would eliminate the use of PPQ inspectors in foreign countries and the appearance of providing unfair advantage over domestic producers. Agreements of this nature could, of course, be made only with countries that have acceptable regulatory agencies. As a long-term objective such a method of accomplishing inspection at origin offers a valid approach for PPQ.

In spite of the associated problems, we are convinced that preclearance of commodities provides one of the most important procedures for excluding exotic pests from the nation. The dramatic increase in agricultural products that come to U.S. shores from all over the world proportionately increases the risk of import of exotic pests. We can no longer depend entirely on the line of inspectors at our ports and borders. There has been, and continues to be, a decreasing capacity of PPQ to thoroughly inspect arriving products (more commodities with the same number or fewer inspectors as well as problems associated with changes in shipping technology). Also, the previous dependence on the "quick-fix" by fumigation is being eroded by the loss of fumigants banned by EPA.

To a great extent, the success of preclearance operations depends primarily, but not entirely, on the reliability and training of the inspectors that PPQ assigns. Concentrated efforts must be made to ensure that preclearance inspectors are well trained, reliable, and mature enough to handle their responsibilities in a foreign setting. Logistical problems, such as carrier stopovers in infested countries and proper placement of cargo in holds, are vitally important but can be worked out in preparation of agreements and monitored by inspectors on location. Preclearance arrangements with developing countries should be encouraged but entered into with caution.

Pulling inspectors from domestic duties and assigning them to preclearance work without providing proper replacements has caused some concern among port-of-entry personnel. Since the need for qualified personnel is obviously the reason for this procedure, it occurs to us that there may be some possibilities for relieving the problem to some degree. We do not rule out the need for increased personnel; additional permanent people in International Programs could be shifted from location to location to fill the gap created by needs for preclearance work. Some use could be made of properly selected and trained non-U.S. nationals. We suspect that some of the opposition within the Agency about use of foreign nationals may be a vested interest, i.e., those who are getting temporary duty may not want to lose the opportunity to continue.

We wonder whether PPQ has fully exploited the opportunity to capitalize on a long-term investment, namely retired PPQ inspectors. There are undoubtedly some who are retired but would welcome intermittent employment, particularly if it involved work in another country and even though it would not add appreciably to their retirement income. As re-employed annuitants they would require only a modicum of technical retraining and would be well versed in PPQ rules, regulations, and procedures and be of minimum expense to PPQ. A correlated source of technical talent is other retired entomologists and plant pathologists who have completed careers in USDA, academia or State regulatory agencies, and who are restless with full-time retirement. Such individuals might require a bit more training than retired PPQ inspectors. However, either source would have the advantage of not depleting the ranks of PPQ inspectors at the various ports of entry.

We put little credence in the suggestion that there is any conflict of interest in PPQ relative to the fact that exporters pay PPQ for the costs of preclearance work.

We wonder if some of the resistance to preclearance within PPQ is not based on the long-held concept that inspection for clearance "belongs" to the port people. Preclearance conflicts with this concept because it is under the administration of International Programs. It seems to the Panel that some integration of purpose, decision-making, and operation would provide a unity that would be helpful.

Some products imported by countries with preclearance agreements with PPQ may subsequently be re-exported to the United States under that country's preclearance agreement. Such products could increase the pest risk to the United States.

Recommendations: (1) Encourage preclearance agreements with all countries that export a reasonable volume of agricultural products as long as that importation can be done with low risk to the United States.

(2) New agreements, such as cut flowers from The Netherlands, should be initiated on a trial basis in order to assure that the U.S. requirements can be met.



(3) PPQ should take action to ensure that re-exported products are not shipped under a preclearance agreement.

(4) Maintain a constant stateside monitoring system with prompt feedback to exporting countries and receiving States.

(5) At least once per year have a member of the regulatory organization from the exporting country come to the United States to observe monitoring inspection of his country's products. Include regulatory people from the receiving States also.

(6) Develop and pursue a plan which will ensure a better unity of purpose between "port people" and those assigned to preclearance work in other countries.

(7) Require that regulatory agencies of exporting countries certify that products destined for the United States meet PPQ requirements prior to PPQ inspections. The basic responsibility for meeting U.S. requirements for imported commodities still remains with the exporting country.

(8) As a long-term objective in preclearance activities, PPQ should work toward approving AQI systems in the exporting countries and use PPQ personnel solely to monitor the systems. When failures occur, approval of the system would be cancelled until PPQ is assured that corrections have been made to meet U.S. requirements. The Panel believes that this concept should be initiated as soon as possible with the apple program in New Zealand.

## 6. Pesticides

Methods: The backgrounds of the Panel members provided a good basic knowledge concerning pesticides, their use, and the controversy surrounding them for the past 30 years. We have seen many extremely effective pesticides come into use, achieve appreciable popularity, and then fade into history as improved analytical techniques and toxicological testing raised serious questions about safety to man or the environment or both. Thus, with the benefit of this experience the Panel sought updating information from Agricultural Research Service (ARS) scientists, staff pesticide specialists in PPQ, and the Environmental Protection Agency (EPA).

Findings: Pesticides have been and continue to be important tools for PPQ. Their judicious use by PPQ provides benefits to the general public, farmers, business people, homeowners, and to the environment. Some of the more important PPQ pesticide needs can be summarized as follows:

(1) Fumigants for space treatment such as in ships' holds and structures, for control of khapra beetle, soil treatment for nematodes and insects, and treatment of other commodities for control of such pests as fruit flies, grain insects, and snails.

(2) Pesticides for topical applications to crops and lands to control or eradicate such pests as grasshoppers, gypsy moth, and fruit flies, and interior applications for disinsectization of aircraft and storage areas.

(3) Residual treatments for soil inhabiting pests such as the Japanese beetle, black vine weevil, European chafer, and nematodes.

(4) Pesticides for dips, drenches, and injection in potted soil and soil balls for insect and nematode control.

Plant quarantine officials became so accustomed to having a variety of chemicals for use that the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) of 1972, amended in 1975 and 1978, and the aggressive actions of EPA under the authority of the Act came as a great shock. The list of usable chemicals for plant regulation dwindled rapidly and has continued to diminish. To make matters even worse, the R & D efforts of pesticide chemical manufacturers either ceased entirely, were drastically curtailed, or turned to a search for less persistent, low residue materials which are of limited use to many plant pest regulators who need longer lasting pesticides.

EPA continues to investigate the remaining plant quarantine chemical tools. A list of those currently known to be under review are as follows:

- (1) Captan--important seed treatment
- (2) Carbon tetrachloride--grain fumigant
- (3) Creosote--gypsy moth ovicidal treatment

(4) Ethylene oxide--fumigation of some plant species and food items sensitive to methyl bromide

(5) Methyl eugenol--a good attractant for the Oriental fruit fly.

In addition to the greatly reduced number of pesticide options for quarantine use, public opposition to the use of even the mildest of pesticides in publicly funded pest control programs continues unabated. This was recently demonstrated at public hearings in Hawaii on the proposed tri-fly eradication program and the public's false perception that massive applications of malathion would be involved. The Hawaii Department of Agriculture and the University of Hawaii representatives interviewed by the Panel displayed some reluctance about the program for this reason.

Even contemplation of the use of radiation as a disinsectization tool for quarantine use must include thought about what kind of labeling will be acceptable to the public.

The relationship between PPQ and EPA, although somewhat improved during the past two years, can be improved even more, particularly at the middle management and technical levels. The problem appears to be made up of (1) remnants of resentment concerning transfer of FIFRA responsibility from the USDA to EPA in 1972, (2) an apparent lack of mutual trust of the capabilities of each other, and (3) frustration experienced by the PPQ staff in attempting to obtain EPA approval for pesticide uses, particularly under the FIFRA Section 18, Federal and State agency exemption provision. This condition leads to ineffectiveness in both agencies and the enhancement of public controversy over the use of pesticides in public control and eradication programs. A more compatible working relationship could result in agreement whereby EPA interpretations would permit evaluation of the benefits of pesticide regulatory uses separate from general crop use. Such a consideration should not overlook the improved safety margin offered by supervised regulatory use compared to applications of the same pesticide by private individuals.

One EPA administrator voiced a desire and need for more cooperative relations with PPQ and suggested an exchange of personnel at the Deputy Administrator level between PPQ and EPA. This would serve to cross-acquaint employees of the two agencies with each other's problems and hopefully establish a better working relationship. He was hopeful that differences that occur from time to time between the agencies could be resolved prior to any crisis and that the agencies would mutually agree on the best alternatives. He expressed the view that it may be possible to save some pesticides for special regulatory uses when considering cancellation, provided the manufacturers will continue to produce the chemicals. This attitude is somewhat in line with that of the European Economic Community (EEC) which proceeds with great caution when considering the elimination of pesticide uses in agriculture. For instance, the EEC is about to drop its last remaining use for DDT.

Based on comments by officials in PPQ, they are also keenly interested in continuing to improve the working relationships between the agencies. The Panel heard that there was evidence of this desire in the latest interactions that have taken place at the Deputy Administrator's level.



ARS scientists who were interviewed expressed a willingness to work on PPQ problems and referred to the close working relationship that exists between the two agencies. They mentioned furnishing most of PPQ's quarantine treatments, but there was little comment on current research to develop new pesticide uses or new pesticides. The ARS Tropical Fruit and Vegetable Research Laboratory in Hawaii is working to find new or improved fumigant uses, including methyl bromide. The latter is being pursued since information concerning the EPA's review of that chemical is encouraging.

Conclusions: There is a lack of working harmony between APHIS and EPA. This is long-term problem and needs to be resolved. It dilutes public confidence in both agencies and interferes with the development and preservation of pesticide uses suitable for the protection of U.S. agriculture from exotic plant and animal pests. Understanding and communication between the two agencies need appreciable improvement. It is evident that PPQ is in a near emergency situation when it comes to available pesticides registered for its needed uses. It has no meaningful residual insecticides for soil treatments and methyl bromide is the only good broad spectrum fumigant available now that ethylene dibromide has been canceled. Both agencies should agree to the most acceptable alternatives if the current pesticides are no longer permitted to be used. This needs to be agreed upon well in advance of any action by EPA; then both agencies should defend the use of the alternatives rather than condemn the action of each other. The only solution to this dilemma is a research program to develop new materials and new adaptations for those currently available. PPQ should request ARS to take the leadership in such a program, utilizing not only its resources, but recruiting those of the State agricultural experiment stations and the pesticide industry.

Recommendations: (1) The Secretary of Agriculture should impress the Administrator of EPA of his concern about the crisis facing agriculture due to the diminishing number of acceptable effective pesticides available for treating imports and of his desire to improve working relations between the agencies.

(2) There should be exchanges in personnel between offices of the Deputy Administrator, PPQ, and the Assistant Administrator, Office of Pesticides and Toxic Substances, EPA, to promote better understanding and communication between agencies. Such exchanges should be for periods of 6 months and on a continuing basis.

(3) The Assistant Secretary for Marketing and Inspection Services needs to place a high priority on the development of new pesticides and new use patterns for current pesticides needed by PPQ for the treatment of imports and for the certification of U.S. agricultural commodity exports.

## 7. Trends In World Trade and Tourism

The Panel focused its attention on the changes that are taking place in world trade and tourism in relation to the effect they are having on the day-to-day activities of the plant protection and quarantine inspection programs.

Methods: The Panel had meetings and discussion with the staffs of PPQ, FAS, ERS, and other USDA agencies, Customs, Environmental Protection Agency, U.S. Postal Service, other agencies of the States and Federal Governments, agriculture industry representatives, international organizations, and officials engaged in world trade.

Findings: Our contacts all revealed the striking changes that are occurring in world trade and emphasized the rate of this change as a major factor in their evaluation. For example, in the last 20 years export cargo has increased 153 percent, import cargo has increased 249 percent, ships entering our ports up 27 percent, aircraft 150 percent, vehicles crossing the borders 67 percent, and the numbers of persons legally entering the United States 186 percent. By the year 2000, the United States will be exporting half of all the crops it grows according to a prediction by the U.S. Department of Agriculture. In 1975, only 1 ton out of every 5 was sold abroad. The United States exports more farm products than any other country. The total peaked at \$43.8 billion in 1980-81. Exports have dropped since then but a continuous upward trend is expected, based on calculations that are part of a major study on world food.

World trade is dynamic and seems to be shifting almost daily. Many factors come to play, for example, pest and disease outbreak, summer droughts and winter freezes, or other catastrophic climatic situations such as the recent cyclone and tidal wave in Bangladesh. The 1984 freeze in South Texas caused a greater demand for imports of citrus from Mexico to meet domestic market demands; such imports were previously resisted by citrus growing organizations in Texas. Recent freezes in Florida have caused some growers there to invest in citrus production in Central America. Undoubtedly, more citrus will be exported to the United States from that area in the future.

The flow of world trade also relates to the strength of the U.S. dollar. It is expected that the present value may continue through 1990. This will make it difficult to increase U.S. agricultural exports which are needed in order to improve our balance of trade problem. Experts predict that the dollar will not return to its low 1980 value but could go to the 1982 level.

In many cases, world trade has taken on increased emphasis. In fact, countries are re-evaluating their imports and exports as they affect their economic situation. As a result, a country may agree to buy a commodity from another country in exchange for the other country buying some particular commodity from it.

Along with the shift of world trade is the global movement of people for various reasons. Tourism is big business. In many countries, leadership is at the Cabinet level of government, an indication of its

importance to those countries. It is gaining in that respect in the United States. Countries are doing all they can to attract people to visit in order to improve their economic situations.

People travel for many reasons, such as recreation, or to seek better living conditions, e.g., immigrants from Latin America and Southeast Asia to the United States. For others, it is religious pilgrimages to visit the Holy Land or the Mecca. Many U.S. people are involved in such pilgrimages and may inadvertently bring pests back into the country.

Last year 26,800,000 international airline passengers cleared the United States, and it is projected that this number will increase by 8.1 percent each year for the next 5 years. This means that in 1990 it will be necessary to clear approximately 42,800,000 international airline passengers. This does not include the millions of people that enter through our land ports.

All persons contacted by the Panel, who were involved in the process of world trade and tourism, expect increases in both areas to continue and emphasized the need for our country's government to plan accordingly.

Trade and tourism leaders have promoted meetings between peoples of the various countries for various reasons. Each year there are more and more meetings at a regional or world level indicating the need to evaluate the changes occurring in countries from that perspective or from a global point of view. For example, the President of the United States, at a recent meeting of the Western nations of the world, had as a major priority the need for a world meeting on trade, such as GATT. Historically, many countries that import agricultural commodities from the United States complain that many of our restrictions are economic barriers rather than sanitary or pest and disease prevention barriers. Due to their worldwide recognition by their counterparts, PPQ's representatives have been effective in counteracting these charges and can do more in the future at meetings of GATT.

The continuous trend of increased trade and tourism causes pressures to reduce processing time by the inspection services because they are viewed as obstacles that block increased expansion in the area. For years there have been efforts made to have a one-stop inspection for all government agencies involved in inspection. Until now a satisfactory solution has not been found, but because of all the changes described, pressure to resolve this issue will continue to increase.

Increased world trade and tourism bring an increased risk of introducing pests and diseases of plants and animals into the United States. The government agencies involved in the processing of commodities and passengers must be prepared to handle this gigantic problem. Their actions must take into consideration the volume and complexity produced by these movements. Any modification of the processing technique must be done to allow for maximum exclusion of pests and diseases with minimum interference of trade and tourism.

The spread of pests and diseases of plants by world trade and tourism is not a theory. It happens. The kaphra beetle has been spread throughout Bolivia from rice seed imported from Pakistan. The Panel members were told that citrus propagating stock from the United States introduced



tristeza into Central America and a mycoplasma of palm trees shipped to Juddah. International authorities cautioned that the frequent exchanges of germ plasm that occurs by exchanges of commodities is one of their main concerns relative to the spread of plant pests and diseases. For example, they cited countries like Saudi Arabia that imported seed in large quantities in order to plant hundreds of thousands of acres of new land. Their problem is to determine how this could be done without introducing pests and diseases in the imported germ plasm.

International organizations such as FAO, EPPO, EEC, and others are aware of these changes. As a result they hold area, regional, and global meetings of their member countries to communicate the dangers and determine how to best deal with the problem. They are struggling to keep countries informed about these matters. One point is certain. World trade and tourism are bound to expand.

Meetings related to trade or the technical exchange of information also can be a means of spreading pests and diseases of plants. For example, botanists or other scientists, nurserymen, plant propagators, and numerous other groups often exchange exotic specimens which can be the means of introducing pests and diseases into a country. In fact, most authorities in pests and disease control, with whom the Panel members met, agreed that these types of people present a major risk.

Many persons contacted in Europe felt the greatest risk was due to bulk shipments of commodities. They felt that volume alone generated almost insurmountable problems in preventing the introduction and spread of pests and diseases by this route.

There has been rapid, almost revolutionary, change in methods of shipping via the use of containers during the last 20 years. This presents a whole new array of problems to the agricultural inspection program. How can an effective inspection of the contents of the containers be made when they are completely full and stacked high and wide on ships at their points of arrival? The flow of these containers is continuous and any sustained interruption of that flow for inspection, or any other reason, causes problems.

The McGregor report recognized this problem over 10 years ago. It recommended that inspection be done in the country of origin as the only viable alternative. Others have recommended that State personnel be used to augment PPQ's inspection at container destination.

The world seems to be divided into three groups when it comes to the best approach to be used to protect their agricultural resources. One group, which includes such countries as the United States, Canada, Australia, New Zealand, and Japan, is very sensitive to all pathways that may be a means for introducing pest or diseases of plants that they do not have. Those countries try desperately to take preventative action along all pathways. The second group, which includes countries like those in Europe, feels that over the years they have been exposed to most plant pests and diseases, so are not as concerned about the possibility of new introductions. Consequently, these countries ignore pathways such as passenger baggage. They feel that bulk shipments of commodities is the major risk of the introduction of pests and diseases, so they concentrate on valid phytosanitary certificates as a means of

prevention. The third group consists of underdeveloped countries that do not have the resources to protect their agricultural assets. Therefore, they spend most of their resources trying to produce enough food to eat rather than on prevention measures to minimize the introduction of plant pests and diseases into their countries.

Conclusions: PPQ needs to be more familiar with the factors that affect world trade in order to evaluate effects they have on the threat of introduction of plant pests and diseases. Increased effort must be made to keep abreast of changes that are taking place worldwide. More aggressive interest on the part of PPQ in this regard is indicated. Annual meetings with FAS, ERS, IATA, and the U.S. Department of Commerce world trade officials would be helpful. The PPQ personnel stationed in foreign countries need to be kept informed about exchanges of information on world trade and tourism that occur at Agency headquarters. This information would help individuals to relate better with the agricultural counselors and attaches in the countries to which they are assigned. Naturally, they need to provide feedback to PPQ headquarters relative to changes in the countries assigned to them.

During the past 20 years, efforts have been made to minimize inspection activities at ports of entry, and they can be expected to continue. The Secretary of Agriculture should be out front with his views about any weakening of inspection system so that any future changes may be prevented since his concern is recognized.

Recommendations: (1) The Secretary of Agriculture should propose that AQI expertise from APHIS be part of any U.S. negotiating team in the world trade and tariff meetings that President Reagan is seeking. The phytosanitary barriers of the different countries will undoubtedly come under challenge, and technical input would be meaningful and valuable to U.S. agricultural interest.

(2) PPQ should broaden its perspective to place additional emphasis on its technical role of supporting the U.S. position in world trade of agricultural commodities. Obviously there must be no reduction in necessary sanitary barriers. Historically, there have been claims that sanitary barriers have been used by some countries to disguise economic barriers. In some cases this may have been true, but the United States has not used them for that purpose.

## 8. Tri-Fly Complex

Methods: Three species of fruit flies, collectively called tri-flies or the tri-fly complex, were accidentally introduced into Hawaii over about a 50-year period. The first species, the melon fly, was noticed in 1895. The melon fly, the Mediterranean fruit fly (Medfly), and the Oriental fruit fly are not only among the world's most economically important pests of agriculture but constitute a constant threat to agriculture on the U.S. mainland. The melon fly has been found less frequently, but the other two species have been found on the mainland on numerous occasions. The discovery of only a single fly in a trap often as necessitated the expenditure of \$15-20,000 for additional trapping to assure absence of an established infestation eradication. In one of the worst situations, the Medfly became established in several northern California counties with the result that eradication procedures cost more than \$100 million.

Repeated infestations by these pests, combined with the potential damage they would cause if they became established, cause us to spend considerable time on the subject. In the process, we talked with representatives of both the Hawaii and California Departments of Agriculture, State and Federal scientists, grower organizations, fruit packers, PPQ supervisors and inspectors, and representatives of the California County Agricultural Commissioners. We also looked at passenger and baggage clearance at airports in San Francisco; Vancouver (BC); Hilo, Honolulu, and Kahului, Hawaii, at fumigation and hot water treatment facilities for papaya, and some fruit and vegetable production areas in California, Florida, Texas, and Hawaii. And finally, we reviewed several documents relating to proposals for tri-fly eradication from Hawaii.

Findings: In the absence of techniques and procedures which would be 100 percent effective in blocking all pathways, known and unknown, there is an extremely high probability of increasing numbers of tri-fly introductions to the mainland. Moreover, there is little doubt that if any of the three species becomes established and cannot be eradicated, the result will be a great deal of damage to mainland agriculture through direct losses, cost of quarantines and control, and loss of export markets.

The possibility of introduction of tri-flies to the mainland from the most likely source would be eliminated if all three species were eradicated from Hawaii. We recognize that such an action would not eliminate the need to continue AQI activities in Hawaii, but it would permit PPQ to assess and redeploy its resources in Hawaii. This, in turn, would permit greater effort toward interception of other agricultural pests, i.e., those from outside the United States entering Hawaii (see Section 18) as well as others in Hawaii from introduction to the mainland.

The Panel understands that for almost 20 years APHIS has periodically assessed the feasibility of eradicating tri-flies in Hawaii. The technology was considered feasible in the late 1970's. In turn, APHIS contracted for the development of an eradication plan and environmental



impact assessment which was completed in 1980. Moreover, funds for construction of a standby mass-rearing facility for use in emergencies such as the 1980 Medfly infestations in California, but also a necessary component of an eradication program in Hawaii, became available in 1981. It is not clear what happened in the intervening period but APHIS awarded a contract in 1983 for the development of an Environmental Impact Study (EIS). The contractor developed six eradication program alternatives, i. e., each with 3-4 options. The draft EIS was completed in November 1984 and had six alternatives ranging from simultaneous eradication of all tri-flies in the State to no eradication effort. Each alternative has a series of options. APHIS tentatively selected the program alternative of simultaneous, Statewide eradication of all three species on an island by island basis and the option of beginning on the island of Kauai. The other alternatives were Medfly eradication alone, Oriental fruit fly eradication, melon fly eradication alone and, Medfly and Oriental fruit fly eradication simultaneously. We understand that construction of the standby mass-rearing facility for Medflies has been delayed due to land acquisition problems.

Meetings were held in Hawaii during December 1984, in order to obtain public comments on the eradication procedure that APHIS selected from the draft EIS. The EIS clearly referred to the integration of several technologies, including the use of malathion applied by ground or aerial techniques. However, newspaper articles concerning the hearings refer, for example, to the USDA proposal "to aerially bomb the islands with malathion to kill fruit flies", "to use aerial sprays to eradicate fruit flies in Hawaii", and "mass spraying of pesticides to rid Hawaii of fruit flies". Apparently the public perception is that eradication would involve only massive, aerial application of malathion.

Public concern in this respect was verified by some of our discussions with various people in different organizations in Hawaii. We heard several remarks which indicated that tri-fly eradication would be desirable but the people of Hawaii would never tolerate the "wall to wall" (shore to shore) spraying of malathion that would be required. For example, representatives of the Hawaii Department of Agriculture (HDA) stated that they are not opposed to the concept of eradication but are opposed to the blanket spraying of malathion. One further example of the public's misconception about intensive insecticide applications was an anonymous letter mailed from Honolulu on April 5, 1985, to mainland industry organizations. With the admonition to "not spray poison on Hawaii", the letter threatens to "mail, ship, and carry the fruit flies...to...California, Florida, and other States for release...from the day the spraying starts".

HDA officials were also critical of the EIS for not providing sufficient details about eradication plans (the document contains 330 pages). Lack of details concerning proposed eradication plans probably stems from the fact the document's primary purpose is to provide an assessment of the environmental consequences of tri-fly eradication, not detailed plans for tri-fly eradication. However before making the assessment, the contractor did develop several possible eradication alternatives. These were apparently based on literature review and interviews with different fruit fly researchers inasmuch as none of the EIS team members has

extensive or recent experience in research on fruit fly eradication. Moreover, we found no evidence that APHIS provided the team with a specific proposed eradication plan.

Conclusions: The U.S. mainland, especially California, will continue to be reinfested at regular intervals as long as tri-flies are found in Hawaii. Therefore, the only real solution to reducing this high probability of infestation is to eradicate tri flies from Hawaii. PPQ obviously recognized this fact when it contracted for an eradication EIS. However, we believe that APHIS and/or the EIS team failed to consider a seventh alternative for ridding Hawaii of tri-flies, i.e., Statewide eradication of all three species sequentially beginning with the Medfly followed by the melon fly and then the oriental fruit fly. A trial eradication program on the island of Kauai would precede initiation of Statewide action on each species. Such an approach would admittedly prolong the period before the State would be free of the three pest species.

There are, however, several good reasons for beginning with the Medfly before beginning eradication efforts on the other two species. To start with, not only is Medfly the least abundant in the tri-fly complex, but it occupies the smallest land area for year around survival. Especially important is the probability that eradication could be achieved by sterile fly releases alone without having to resort to pesticide applications. This would obviously eliminate any attendant potential environmental hazards and be responsive to those who are concerned about pesticides in the environment. The cost of such an operation would be far less for any one year than any operation against all three species simultaneously. This would eliminate the need for major outlays during any one year and spread the cost over several years. Certainly the Medfly has the greatest potential for introduction and establishment on the mainland. Moreover, experience to date indicates that it would be the most damaging and the most difficult to control.

Inasmuch as components of the technology for eradicating the melon fly and the Oriental fruit fly need further improvement and testing, initiation of action against the Medfly would enable researchers to complete the requisite refinement of eradication techniques for the other two species. Moreover, and inasmuch as we heard and read some expressions of concern about what the Malaysian fruit fly (Dacus latifrons) would do in the absence of tri-flies, sequential species eradication would allow scientists time to develop requisite biological data as well as eradication or control techniques for the pest. And last, but by no means least, interisland quarantine would be far more simplified and for less costly than would be the case in an island-by-island program to eradicate all 3 species simultaneously.

Recommendations: (1) The Panel recommends that eradication of the Medfly from Hawaii, using the sterile male technique, begin as soon as possible.

(2) APHIS should start developing a plan for subsequent sequential eradication of melon fly and Oriental fruit fly. In doing this, appropriate APHIS staff and staff of the ARS Tropical Fruit and Vegetable Research Laboratory should review all research data applicable to eradication technology, including work currently underway, such as the pilot experiment to eliminate melon fly by male annihilation on Rota. A single, specific plan developed in this manner would factor in the most recent research data as well as the most refined technology to-date. Using the plan, PPQ should contract for an EIS which would address specific topics, eradication actions, and operations. This would enable those attending public hearings to focus their comments and views on specific activities and not digress into speculation about different alternatives and options for eradication. A Governor's level committee, consisting of a cross section of interests, should be established to monitor progress of the program.



## 9. Survey and Detection

The Intersociety Consortium for Plant Protection (entomology, phytopathology, nematology, and weed science societies) after a study of the plant protection responsibilities of PPQ in July 1980, recommended that the Agency provide the leadership for the establishment of a national plant pest survey and detection system.

Methods: To obtain information concerning the system that began to evolve in 1981 with the appointment of a National Coordinator in PPQ, the Panel had an indepth interview with the National Coordinator. In addition, a similar interview with one of the seven PPQ Area Survey Coordinators provided information on Federal/State relationships. There was also an opportunity to discuss the progress of the program on a local basis with PPQ and State Department of Agriculture personnel familiar with the day-to-day functioning of the system.

Findings: Entomologists, plant pathologists, and others involved with solving plant pest and disease problems have long recognized that an effective, nationally coordinated survey and detection program is badly needed. Such a program, inestimable in value to production agriculture in the battle against numerous domestic pests and diseases in the United States, is a necessary backup to AQI exclusion programs and as support to emergency programs.

The United States has initiated such a national plant pest survey and detection system involving all 50 States. It is structured as a Federal/State cooperative program with each State required to have an interagency survey coordinating committee. As a minimum, the committee membership in each State must include the State plant protection agency, the land-grant university, and PPQ. The involvement of other interests such as the State forestry agency and a mixture of disciplines is encouraged. In the field, there is similar emphasis on the involvement of people from many sources. These include Cooperative Extension personnel, State plant inspectors, PPQ field personnel, food processor field persons, and others qualified for and involved in making crop pest observations.

While the system serves a multiplicity of interests regarding plant pests and diseases, its foremost attribute is to focus thousands of eyes, already in place, on the early detection of exotic plant pests that may slip through the PPQ exclusion barrier (AQI).

The program does not yet have a data base management system. However, one is being developed by contract and is expected to be online in January 1986. Currently, survey information developed at the State level is transmitted weekly by computer to the USDA storage and retrieval center at Ft. Collins, Colorado. This includes program pest survey information for gypsy moth, fruit flies, alfalfa weevil, and khapra beetle. Information on an exotic pheromone testing program is also being placed in the system. The introduction of exotic pests at U.S. ports will be handled by another system, the Pest Information Network (PINET).

Unfortunately, the program does not have the guidance of a prioritized list of exotic pests and diseases likely to gain entry into the United States. Authors of the McGregor Report saw this need and developed and used criteria to rank exotic pests and diseases. They found that a very small number of pests are likely to cause relatively large losses if introduced into the United States. The high concentration of risk in a few species led that group to suggest that APHIS concentrate all available resources on high risk pests. However, in order to effectively do so, they pointed out that research was needed to refine the list of high risk pests and diseases.

The APHIS Evaluation Task Force (TF) which reviewed the Report recognized the importance of the principle of concentrating on high risk pests and noted that an "informal" ranking system was used by APHIS, one which differed substantially in basics and results from the McGregor system. Both systems were felt to suffer from a lack of accurate as well as definitive criteria which would be necessary for measuring pest risks. The TF recommended establishing scientifically defensible criteria for such measurements followed by the development of a "top 100" ranking of potential plant pests and animal diseases not known to occur in the United States. It is also recommended that biological data be developed for each pest as it was identified.

PPQ informed us that a list of significant plant pests was developed but problems with the criteria used to produce the list negated its usefulness. The greatest problem was the lack of stability within the list, that is, any change in the values caused "the ranking to flip flop to such an extent that one could not use the list to determine the most significant pests."

In addition to the uses mentioned, information gathered through the national plant pest and detection system will have increasing value in phytosanitary certification of U.S. agricultural products for export inasmuch as it will provide definite information on the distribution of pests of interest to foreign plant quarantine organizations.

The program, as might be expected for one involving so many technical problems and so many participants, has problems, not the least of which is a shortage of funds. PPQ funds permit the Agency to furnish each State with an average of \$28,000 annually.

Although State contributions total about 12 times those of PPQ, many States have funding problems and cannot come close to California's annual expenditure of \$6 to \$8 million or Florida's \$12 million. Shortages in some States are said to be adversely affecting program morale and, therefore, effectiveness has declined. On the other hand, other States are forging ahead to the point of showing specific provisions for exotic pest survey in their State plans.

Conclusion: Despite a vigorous exclusion effort, some exotic pests and diseases are bound to gain entry. A well designed and active national survey and detection program will discover early incursions of exotic pests and provide substantially greater opportunity for successful eradication at minimum cost. Although some States and groups of States have well developed survey and detection programs to serve agriculture

production, these are not structured to meet the needs of PPQ. However, they do provide a foundation on which to initiate the construction of a national program that can serve PPQ's needs for early detection and subsequent support for exotic pest and disease eradication programs.

The need for a list of high risk potential plant pests and animal diseases is just as great today as it has ever been. We also believe that the problems encountered by PPQ, such as "lack of stability," can be overcome with adequate research input. With good up-to-date data, we would expect such a list to change with changes in volume and type of commodities imported, weather patterns, political conditions, evolving control or eradication technology, and so forth. Moreover, given the wide availability of computer information storage and networking, the list could be made to reflect current conditions as well as be immediately available to all PPQ locations.

A national computerized plant pest survey and detection system is developing under PPQ leadership and with State cooperation. Although not operating smoothly, it must be made to work inasmuch as it is indispensable to the proper discharge of the PPQ mission. PPQ cannot go it alone. Thus, the Agency must constantly work on public relations with its State and industry cooperators. In fact, it must give some of the same kind of attention to its field personnel in order to improve their commitment. Fundwise, there is hope for future improvement since PPQ continues to give survey and detection relatively high priority in its budget request.

Inasmuch as the data bases will be useful to survey and detection activities, PPQ should continue to work with ARS and others in the development of the Western Hemisphere Immigrant Arthropod Data Base (WHAID) as well as Pest Organisms of the United States and Their Natural Enemies (POUSNE).

Recommendations: (1) PPQ should complete the survey and detection system for exotic pests and diseases as soon as possible since it is a vital component of its emergency programs.

(2) The Agency should proceed at once to develop, publish and keep current a list of potential high risk exotic pests and diseases, prioritized according to the danger to U.S. Agriculture. The Panel further recommends that this be the first assignment for TAP.



## 10. Quarantine 37

Quarantine 37 (Q-37) is the U.S. Department of Agriculture's (USDA) quarantine which restricts the importation of seeds, plants, and propagative parts of plants to prevent the introduction of exotic plant pests. The restrictions vary from none to prohibition in direct proportion to the known or expected risk.

Methods: The Panel received comments from domestic industry representatives, foreign industry producers and exporters; Federal, State, and foreign regulatory officials; research scientists; Food and Agriculture Organization (FAO), and European Plant Protection Organization (EPPO) officials; and United States Agricultural Counselors in two of the five countries seeking expansion of Section 8 exemptions of Quarantine 37. Additionally, a team from the Panel had the opportunity to observe appropriate plant growing establishments in The Netherlands and Denmark.

Findings: From its inception, Q-37 has prohibited importation of soil due to the pest risks inherent to that growing medium. This provision mitigated the importation of kinds of plants that do not survive well when handled in a bare root condition. Thus, to facilitate international commerce in plants, U.S. importers and foreign exporters in 1974 sought and in 1980 obtained a quarantine modification to permit a limited number of kinds of plants to enter the United States when grown under special conditions and in specified artificial media.

The Federal Register, Volume 45, No. 94, Tuesday, May 13, 1980, announcing the revised Q-37 stated "The provisions in 319.7-8(a) of the final rule provide that at the time of importation or offer for importation into the United States, any restricted article shall be free of sand, soil, earth, and any other growing media, except under certain limited conditions. This restates a long established Departmental policy of requiring freedom from growing medium or a 'bare-root' condition as the working principle for protection from the introduction of diseases and pests by providing easy physical and visual access to the total plant. In general, the presence of a growing medium conceals a vital portion of the plant from access and view and can also be a source of many diseases and pests. There was discussion at the public hearing in favor of allowing any restricted article to be imported in growing media as specified in 319.378(d) of the proposal. However, exceptions to the bare-root requirement must be made with great care and must be based upon sound biological reasons for departing from the norm. They also, of necessity, must be based upon the capability to assure the absence of diseases and pests" [8(d) of the proposal became 8(e) of the final rule)].

Until recently, The Netherlands has been the only country shipping plants to the United States under the exemption provisions. A producer in Israel began exporting under the program this past year. Originally, five Netherlands firms participated, but only two continue. Of the kinds of plants, African violets, begonia, ferns, gloxinia, and peperomia, only the first three have been exported from The Netherlands in commercial quantities.

The following totals of annual shipments from The Netherlands for the years 1978-84 were obtained from The Netherlands Plant Protection Office.

	<u>Fern</u> (000)	<u>Begonia</u> (000)	<u>African Violet</u> (000)
1978	2,725	745	514
1979	2,923	433	404
1980	2,125	297	132
1981	2,446	226	176
1982	2,865	491	145
1983	2,942	866	250
1984	2,860	657	266

In the introduction of the Federal Register explanation of the complete redrafting of Q-37, it was stated that PPQ had "already been advised that additional information may be presented for the purpose of establishing a basis for adding to the list of articles allowed to be imported in growing media pursuant to 319.37-8(e) of the final rule" and "Although the Department does not at this time have sufficient information to provide a basis for including additional categories of articles to the list in the final rule, the Department welcomes any additional information that might be presented concerning whether additional categories of articles should be allowed to be imported in such growing media."

In response to PPQ's suggestion, several countries did respond with petitions for added commodities. The first petition to be acted on was that of The Netherlands for the addition of Hyacinthus spp. After review by PPQ, Federal Register announcement of the proposal and a public hearing Section 8(f) was added to Quarantine 37. It contained similar requirements to those in 8(e). Sixty added petitions remain to be acted upon. These are:

Aechmea	Aglaonema	Alstremeria
Ananas	Anthurium	Aphelandra
Araceae	Australian Waxplant	Azalea
Bromeliaceae	Calathea	Calceolaria
Chrysanthemum	Cissus	Codiaeum
Cordyline	Crocus	Croton
Cryptanthus	Cyclamen	Dianthus
Dieffenbachia	Dipladenia	Dracaena
Epiphyllum	Ficus	Gerbera
Guzmania	Gypsophila	Hedera
Hibiscus	Hohenbergia	Howea
Iris	Kalanchoe	Larus
Lilium	Mandevilla	Marantaceae
Musa	Neoregelia	Nertera
Nidularium	Packystachys	Palms
Pelargonium	Philodendron	Primula
Rhipsalidopsis	Rhoicissus	Schefflera
Schlumbergera	Scindapsus	Simmondsia
Spathiphyllum	Streptocarpus	Tillandsia
Tulipa	Vriesea	Yucca

In response to the request of the foreign plantsmen, the U.S. plant-growing industry has voiced opposition to expanding the list of exempt plants. They have pointed out the pest risks they perceive and question the advisability of continuing to accept peat as an approved soil substitute as it is presently; however, others stated that the risks cited did not apply to plants grown in greenhouses under PPQ agreements.

Several artificial media are approved in Section 8(e) and Danish and Dutch growers have asked for the addition of rock wool. The present exemption provisions for the five plants permitted entry under Section 8(e) require production in greenhouses only and those must have concrete floors, screened vents and double outside doors. Periodic monitoring inspections are made by both The Netherlands plant protection agency and PPQ, the whole program being conducted on a preclearance basis. While the Panel team was in Europe, it visited one of the two Dutch growers producing under the program. This was a fern production establishment, that to all appearances, was complying with the stipulations of the quarantine.

Conclusions: (1) Among plant protection officials, soil is generally recognized as a substantial pest risk. PPQ subscribes to this opinion and therefore Q-37 prohibits the importation of soil.

(2) The currently permitted use of peat as a soil substitute has been questioned as a pest risk with some scientific support.

(3) Several of the plants submitted for addition to the Section 8(e) exempt list are restricted or prohibited in other sections of Q-37 for various reasons.

(4) Assessment of the pest risk involved with the plants on the request list is complicated by the range of the list from families to genera.

(5) Any proposed changes in Q-37 must be considered by PPQ after a public hearing.

(6) The pest problems associated with 8(e) were reported with sufficient detail and verification that the Panel concludes that arrival inspection at a level to validate the continued integrity of the endorsed phytosanitary certificate is justified.

Recommendations: (1) The Panel recommends that the provisions of Section 8(e) and (f) of Quarantine 37 be retained with the addition of a system of spot checking at a variable rate to further assure the integrity of the procedure. Properly enforced, these provisions contribute to the reduction of pest risk.

(2) Rock wool should be accepted as a growing medium.

(3) PPQ should reconsider the acceptance of unsterilized peat as an acceptable soil substitute.

(4) PPQ should hold a public hearing on the propriety of adding those genera of plants listed as such in the requests for addition to exemptions listed in Section 8, Quarantine 37. Provided such plants



meet all other requirements set forth in Quarantine 37, we see no reason, biologically, for prohibiting the import of plants that can be bare-rooted or produced in PPQ approved greenhouses in sterile media.

## 11. International Programs

Methods: The panel has spent considerable time on the issue of International Programs (IP). We had several lengthy discussions with the PPQ official responsible for administering the program. We have reviewed several PPQ documents relating to IP. There was considerable input from the several regional directors, various area supervisors, and inspectors. Indepth interviews were held with PPQ officials and inspectors and plant protection officials located in Guatemala, Chile, Japan, New Zealand, The Netherlands, Australia, Denmark, United Kingdom, Mexico, the Philippines, and other locations. Conferences were also held with the representative of the American Seed Trade Association and other representatives of industry.

Findings: International Programs of PPQ involve four activities. They are:

(1) Facilitate U.S. agricultural exports by (a) reviewing the biological basis for regulation; (b) intervening with foreign governmental regulatory agencies; (c) expediting transfer of quarantine information and documents; and (d) coordinating export preclearance of commodities in the United States.

(2) Exchange technical information with other countries on (a) pest/disease distribution; (b) control/eradication action plans; and (c) technical information for ongoing programs.

(3) Administer preclearance of foreign commodities into the United States by (a) developing preclearance procedures; (b) supervising treatments/ inspections; and (c) coordinating quarantine information flow.

(4) Strengthen national, regional, and international organizations by (a) training; (b) preparation of model quarantines; (c) preparation of model pesticide laws; (d) encouraging common commodity treatment procedures; and (e) involvement in quarantine information programs.

Currently, IP has people and activities in Mexico, Central America, the Caribbean, the Bahamas, Europe, Africa, India, Australia, the Philippines, and Japan. Others are being planned. Ultimately there will be three international regions: Latin America; Europe, Middle East, and Africa; and Asia, Australia, and New Zealand. We have some apprehension that each person on foreign assignment has too much territory to cover.

Inasmuch as the charge to the Panel deals primarily with exclusion of exotic pests from the United States, the balance of our discussion under this section deals primarily with only three basic activities: exchange of technical information, administration of preclearance programs, and the support of national, regional, and international plant protection organizations.

As indicated in Section 5 (Preclearance) of this report, it is very important for PPQ to know which significant pests are present in a country that is exporting agricultural products to the United States.

It is also important that PPQ know what pests are in countries that may eventually wish to export to the United States, or pests in countries adjacent to countries that are already exporting to the United States, thus constituting a potential for movement of such pests into exporting countries. Further, knowledge about the presence of a pest or disease in one country and its possible or actual movement to other countries provides epiphytologists with information about the habits and movement of such pests as well as the effectiveness of the exclusion efforts of invaded countries. By the same token, of course, other countries may wish to have similar information from the United States.

In addition to presence of pests in nations around the globe, PPQ needs to be aware of control and eradication efforts on pests in other countries. In some situations, PPQ may very well be a participant in eradication efforts in other countries. Such efforts are normally, but not necessarily entirely, confined to nations bordering the U.S. The Medfly eradication program in Mexico is an example. That program now includes Guatemala and may ultimately include other Central American nations. In cases where PPQ may not be an actual participant in an eradication program, it frequently provides technical information and other assistance to countries that are attempting or planning to attempt such programs.

Preclearance of commodities for export to the United States, is discussed in Section 5 of this report. We would add here, however, that the presence of PPQ staff in a country primarily for commodity clearance also provides opportunities for exchange of information on pest distribution, eradication/control programs, and research results as well as informal training, not only for nationals of the exporting country but also representatives from other countries (as time permits). There are also opportunities for PPQ staff to learn through association with specialists in foreign countries.

There are at least ten international plant protection organizations representing different regions in the world. These organizations represent more than 180 countries although there are some duplications, i.e., one country may belong to more than one organization. The United States (PPQ) is a member of four such organizations: Caribbean Plant Protection Commission (CPPC), North American Plant Protection Organization (NAPPO), and South Pacific Commission (SPC) and International Plant Protection Convention (IPPC).

The purpose of these organizations is to enhance the protection of agricultural crops against pests and diseases. Pest exclusion is a fundamental part of such activities, but in many of the lesser developed countries exclusion is not a highly significant consideration. Exporting agricultural crops is a more important need in such nations. To accomplish the exporting function, pest control in production, harvesting, packing, and shipping take high priority.

Separate and apart from the IP activities discussed above, we found that there is some sincere concern among PPQ personnel that IP tends to employ non-U.S. nationals for some of its work in foreign countries and places too much responsibility on such employees.



Conclusions: We are convinced that the International Programs activities of PPQ constitute a most important component of the Agency's efforts to exclude pests from the United States. The program should be continued and expanded as planned. The agency's efforts in procuring and sharing information on pest distribution and eradication/control programs of dangerous pests in adjacent and/or nearby nations contribute significantly to the exclusion of pests from the United States. This involvement on the part of PPQ management recognizes the need to keep abreast of world development in trade and tourism as well as prevention, control, and eradication of exotic pests and diseases.

Participation in programs to eradicate dangerous pests in adjacent and/or nearby nations should be continued, if not expanded.

We doubt that PPQ should be a member of all of the other international plant protection organizations. Indeed, it might not even be possible. We are convinced, however, that PPQ should be observers at the meetings of these organizations and participate in whatever ways that are feasible. We are aware that PPQ International Programs representatives do attend and participate in some of them. This procedure provides PPQ with a constant update on pest conditions in member countries. It may allow the opportunity for input into quarantine programs, pesticide laws, and commodity treatment procedures. It also allows PPQ to keep up to date on research to control or eradicate pests in these regions.

We can appreciate the apprehension of some people in PPQ about the employment of non-U.S. nationals in its programs in other countries. However, in our observations, reviews, and discussions with PPQ personnel (including non-U.S. nationals) in other countries, as well as our experiences with other APHIS programs outside of the United States, we have seen many highly-skilled non-U.S. nationals who did good work. All of these people were well trained and had ultimate responsibility to PPQ supervisors. It is our conviction that the concerns indicated above will be minimized by careful selection, appropriate indoctrination and training, and supervision of non-U.S. personnel in whatever duties may be required of them. Further, utilization of such people, whenever possible, also improves the image of PPQ in that country.

Recommendations: (1) Proceed with implementation plans for completing the global organization for International Programs even if it must be done at the expense of other Agency activities.

(2) Continue to use foreign nationals in IP activities in countries where PPQ people are present to provide supervision.

(3) IP should have as a high priority the policy that its personnel keep other PPQ people, State counterparts, and industry organizations fully informed of its activities so they can better appreciate the benefits being derived from people on foreign assignments.

## 12. Research

PPQ uses a great deal of information from many sources in making decisions necessary in fulfilling its mission. Up-to-date technical data, derived through research, are especially important in meeting the foreign pest exclusion part of that mission. Some decisions are simple and can be made on currently available data, but most are much more complex and must be based on several pieces of incomplete data.

Methods: PPQ obtains research from a number of sources, the primary one being Agricultural Research Service (ARS). In addition, several other USDA in-house agencies, such as Forest Service, Economic Research Service, and Office of International Cooperation and Development (OICD), conduct or contract for research of benefit to the Agency. PPQ also has a long history of interaction with the State system and obtains some research through the State Agricultural Experiment Stations. And, of course, considerable data are obtained through review of the world's scientific literature.

It seemed to the Panel that practically everyone with whom we talked about foreign pest exclusion also expressed thoughts about the need for research in support of PPQ operations. Therefore, we will not attempt to list the individuals or the organizations and institutions represented. In addition to looking at AQI operations and observing research being conducted in support of such activities, we also studied the McGregor Report ("The Emigrant Pests").

Findings: The need for and value of research in support of a regulatory-control program was reflected in numerous comments. We heard about the need to develop new detection procedures, find alternative chemical treatments, discover ways to identify pest origins, and so forth. Such comments were not only made by individuals in PPQ but by all manner of other individuals outside the Agency.

The McGregor Report provided a good framework and starting point for a review of the kinds of researchable problems encountered by PPQ. The Report states, for example, that "Some entomologists contend that the large potential for invasion, with its uncertainties, makes any attempt at ordering those foreign insect pests which are potentially most damaging to U.S. agriculture, totally misleading. The viewpoint of these entomologists is that there are hundreds of thousands of insect species abroad, and only a comparative handful of them are of economic significance. While most of the latter turn up on the lists of unwanted insects, they do not always live up to their reputations following arrival in their new environment. On the other hand, a number of the more serious introduced pests have come from that vast group of foreign pests whose potential for damage is unknown or not suspected. In other words, our ability to predict the consequences of the introduction of any given foreign insect is so poor that any list of allegedly injurious species would provide an inadequate basis for program decisions."

We agree but could find no evidence of research being initiated which would help PPQ determine which species would have adverse economic significance if introduced into the United States. However, considering the estimated 800,000 species of identified insects not



currently found in the United States, not to mention the estimated 2.5 million identified and unidentified species in the world, we can understand the seemingly near hopelessness of initiating any research which would shed light on the problem.

In conducting their study, McGregor, et al., found that a number of exotic pests have a very high Expected Economic Impact (EEI) but there is considerable uncertainty associated with the value. They pointed out that while those pests were believed to be very significant, the certainty of that belief was relatively low. Consequently, they recommended that immediate steps be taken to expand knowledge of those pests. They suggested that research facilities of ARS and the land-grant colleges be employed to conduct investigations into species characteristics that are key factors in their international spread, e.g., distribution, survival in transit, and colonization. In actuality, it would be extremely difficult for ARS or the land-grant institutions to respond to the recommendation as stated inasmuch as the pests maintained for such studies would have to be under quarantine. However, we assume that the Report intended to convey the need for research to be undertaken in appropriate foreign countries, either by scientists in ARS or land-grant institutions personally conducting the research on site in those countries or by contracting with scientists in those countries to conduct the research. Regardless, we found no record of PPQ pursuing the subject with ARS or the land-grant universities.

One of the PPQ Area Directors for International Programs emphasized that taxonomy and biology are not well known in different parts of the world for many pests of potential significant importance to the United States, for example, fruit flies of the genus Dacus. In other words, the information is often unavailable in the world literature and can only be obtained through research. This kind of research is a component of that discussed above. Much research of this nature could be developed, without expending hard currency, through the Special Foreign Currency Program (PL-480) which ARS administered for years and which is now administered by OICD. Unfortunately, after talking with a number of people on the ARS National Program Staff, we found that PPQ in recent years does not seem to have requested that biological and taxonomic data be developed on pests not known to occur in the United States. A similar situation seems to exist with respect to OICD.

Biological risk assessment is one of PPQ's more difficult tasks. In large measure, this is due to inadequate biological data which, in turn, not only reflects a lack of research but also the difficulty of conducting appropriate research. The situation is greatly complicated by the fact that there is no satisfactory or scientific way of evaluating quarantine programs. Certainly, a majority of the people with whom we discussed the problem agreed that the number of interceptions alone is not an adequate measure for evaluation.

The McGregor Report recommended that "explicit standards" be established in order to evaluate how much risk can or will be tolerated in respect to known economic pests in cargo and baggage. The APHIS TF felt that such standards would have limited acceptance. They cited technical difficulties in developing risk standards as well as difficulties in promoting acceptance of the concept by members of Congress, Federal and State regulatory officials, and industry representatives. However, they



recommended expanding the development of risk standards "where practicable and justifiable", reviewing PPQ pest data collection systems to determine if the systems would provide information needed to establish risk standards, determining the relationship between numbers of pest interceptions and numbers needed to establish infestations and determining "pathway survival" routes.

PPQ subsequently made some effort to develop risk standards, including a pest-risk model; however, the activity was shelved because of "higher priorities". We were told that pest-risk models are probably limited because of PPQ's inability to establish reliable values for various components. We did not learn of any attempt to obtain such data from research resources. Pathway survival routes were completed for 44 pests but pest data collection systems were not reviewed nor was there an effort to obtain research to determine the relationship between numbers of pest interceptions and numbers needed to establish infestations (threshold levels).

The question of threshold levels is particularly difficult inasmuch as so many variables are involved. However, a great many beneficial insects have been imported and released over the years. Numbers, sex ratios, environmental conditions, and host availability varied greatly. Therefore, with the current availability of computer models, systems analysis and artificial intelligence, we wonder if appropriate research on beneficial insect release and establishment would shed light on the question of threshold levels in pest establishment. A model of a commodity import system involving insect pests would, undoubtedly, be more complex than a beneficial insect import system, but questions/answers about the latter would seem to be useful in describing the former. Similarly, computer generated models of threshold levels of inoculum of some exotic plant disease might be developed based on research involving pathogens, such as fungi, to control weeds in field crops. Sound biological data would be imperative in all models.

The Panel understands that PPQ annually prepares a list of research needs which is sent to ARS for use in developing that Agency's research programs. As an example, we were shown the FY86 list which was transmitted to ARS on July 2, 1984. There was a number of needs listed in high, medium, and low priority categories.

PPQ understands that ARS cannot undertake research on all its needs. However, as was pointed out, many of its problems occur on short notice and/or require immediate attention. Such problems also require up-to-date technical data. Given current budgetary constraints, ARS has difficulty initiating new research except by redirection of research already underway. PPQ pointed out that this may take up to three years. PPQ also feels that the budget situation, combined with ARS's increased emphasis on basic research, is impeding research on many of the more applied problems of concern to it.

We could not help but wonder about the extent to which these are real problems and the extent to which they are reflections of another problem, namely, effective communications. For example, there may be inadequate understanding of the relationship of some basic research, such as acoustical detection of fruit fly larvae in grapefruit, to regulatory-control program goals. As another example, PPQ pointed out

that the reduction in the ARS National Program Staff has made it difficult for it to know whom to contact concerning different problems.

Obviously, good communications, not formal interagency exchanges, are necessary if the research Agency is to understand the type and magnitude of regulatory-control Agency needs and, in turn, keep that Agency apprised of progress made toward resolving those needs. In this respect, we noted that ARS promptly acknowledged receipt of the APHIS FY86 list of research needs and promised to develop a summary report on each item in the list. However, the report had not been prepared when we inquired eight months later.

SAES representatives also reflected inadequate communications. They noted, for example, that some state scientists feel that PPQ imposes too much "red tape" on their movement of insects and plants. However, it was obvious that some of the criticism would have been more appropriately directed toward State regulatory agencies. There was one suggestion that PPQ get onto the program at the meeting of Entomology Department Heads which is held in conjunction with the annual meeting of the Entomological Society of America.

Inadequate communications seem to also be illustrated in PPQ's need for improved or new detection procedures and devices. The McGregor Report emphasized the need for devices to detect plant and animal contraband in commercial cargo as well as pit- and hand-baggage. The Report also cited many potentials for the development of devices to help identify contraband and noted that ARS was conducting research on some of the devices or on related principles. During our study, many individuals in PPQ, State agencies, and foreign governments verified the need for such devices as well as devices, techniques and/or procedures which would identify latent diseases in plant materials.

Because of a common desire to prohibit the entry of certain plant materials, there are elements of common interest between research conducted by ARS and Customs. The McGregor Report suggested coordination and cooperation between the two agencies. We agreed but were unable to learn of any communications or collaboration between the two agencies. In fact, we were unable to find anyone in ARS who could appraise us about progress on the different research approaches identified in the McGregor Report or who was knowledgeable about overall ARS efforts in research on detection.

Similarly, the APHIS TF which reviewed the McGregor Report recommended that PPQ designate a Liaison Officer to keep in close contact with Customs in order to learn about new detection methods. The TF also recommended the designation of an individual with full responsibility for maintaining current knowledge of advanced detection technology and coordination with all operational, developmental, and evaluation staff.

We understand that PPQ has had a Liaison Officer with Customs for over 10 years but, as described to us, that individual's responsibilities appear to be directed toward PPQ input to Customs procedures rather than



learning about new Customs technology. Moreover, the recommendation for an individual having responsibility for advanced detection technology was not implemented inasmuch as "detection technology approaches are currently coordinated between the Field Operations Support Staff and the Technology Analysis and Development Staff."

Most operational people with whom we talked considered better detection devices to be their most urgent need (discussed in the preceding paragraphs). As a corollary, better ways to determine the source of origin of new introductions was named almost as frequently. Research to "develop new technologies to detect" contraband in baggage and cargo headed the list of FY86 research needs which APHIS sent to ARS. However, the list did not include any reference to a need for technologies to determine the origin of new infestations, although such information would be extremely useful in helping PPQ intercept foreign pest pathways. During our meetings with ARS scientists and visits to their laboratories, we learned of several research projects which have potential value in fingerprinting the origin of pest introductions even though some of the research is being conducted on beneficial insects. The projects included isozyme analysis, x-ray emission analysis, mitochondrial DNA, monoclonal antibodies, and others.

The McGregor Report recommended research on pathway survival of diseases and pests as well as a specific experiment with foot-and-mouth disease. The APHIS TF which reviewed the McGregor Report concurred and recommended that the agency "design and obtain specific research on the pathway survival of diseases and pests as a continuing function of risk assessment." Unfortunately, such research was never undertaken.

When discussing real and suspected pathways for pest entry, a surprising number of U.S. (both State and Federal) and foreign regulatory officials noted that scientists, botanical garden curators, and plant hobbyists are not uncommon offenders. There are various excuses given for such actions, including a feeling by some scientists that they are more knowledgeable about particular pests and plant materials than are regulatory officials. Another excuse which seems to have some validity is that it takes an inordinate amount of time to clear plant material through quarantine, sometimes 4 to 7 years. There was a feeling, among some scientists with whom we talked, that the problem is due, in part, to routine enforcement of regulations as well as a feeling that some of the regulations being enforced are out of date. However, we should point out that plant collectors sometimes compound the problem by failing to notify PPQ about major collection trips. As a result, it is not prepared to handle the large volume of material brought back, fails to have appropriate root stock available and so forth. Annoyance about long delays leads to the temptation to smuggle plant material into the United States and not wait for official clearance through quarantine. Moreover, individuals who smuggle plants give them a great deal of care and attention. Hence, there is much greater probability of survival and establishment of a latent disease than there would be in the case of a tourist discarding a piece of smuggled fruit infected with the same disease.

Conclusions: APHIS has many needs for research to develop data for use in making technical decisions as well as developing new or improved control or eradication programs.



Very little, if any, research is being conducted on several subjects which are extremely important to PPQ. Paramount among those problem areas are needs for biology and taxonomy of potentially high risk pests and diseases, better economic data on the impact of potential foreign pests if they become established in the United States, threshold levels required for pest establishment, new or improved detection devices, and more information on pathways by which pests enter the United States.

Techniques and procedures for determining the origin of new pests found in the United States would greatly assist PPQ in the interception of foreign pest pathways. ARS has research underway which might be adapted and exploited for field use on pest introductions.

PPQ needs to explore different ways to improve communications with the research community. A better understanding of mutual goals and objectives will aid all parties in helping to keep pests and potential pests out of the United States. This conclusion was based on our perception that the McGregor Report recommendations for research were not undertaken by ARS and/or the land-grant institutions, that there is poor feedback on the annual lists of research needs which PPQ transmits to ARS, that some of the researchable needs identified by PPQ operational people are not being met, there is an inadequate understanding of basic research objectives, and that some State scientists feel that too much red tape is involved in the movement of insects and plants.

Regardless of the "reasons" given for smuggling pests or plant materials into the United States, none are sufficient to excuse offenders for endangering American agriculture.

We reviewed the APHIS list of FY86 research needs and believe that it adequately covers all the recommendations and suggestions, not mentioned above or in Findings, that we encountered during our visits.

Recommendations: (1) The Assistant Secretary for Marketing and Inspection Services should stress the importance of research relating to AQI programs within the Department's priorities so that when funds for research are being approved, adequate support for AQI programs will be assured.

(2) The Intradepartmental Technical Advisory Team, recommended in Section 21, should give prompt consideration to the following research areas:

- (a) Biology and taxonomy of potentially high risk pests and diseases when such information is not well known.
- (b) More definitive data on the expected economic impact of potential foreign pests becoming established in the U.S.
- (c) Conditions and threshold levels required for pest and pathogen establishment, especially the potential for using data on release of beneficial insects to develop mathematical models to estimate threshold numbers leading to pest insect establishment.
- (d) Detection technology.
- (e) Pest pathways and their interdiction.

(3) PPQ should also make a special effort to become informed about research which ARS has underway on techniques that may be useful in determining the origins of new infestations of pests and pathogens, keep abreast of progress, decide which projects have direct or indirect potential for operational use in the identification of foreign pest origin, and give priority to those with greatest potential for application in the field.

(4) The six-person (three APHIS and three ARS) committee working on ways to improve the process of clearing plant materials brought under quarantine into the United States should vigorously pursue its work and develop a system which will reduce the long time delays often involved in the process.

### 13. Citrus Canker

Xanthomonas campestris pv citri is the bacterium which causes citrus canker. Canker can be spread by infected nursery stock and budwood, by windy rainstorms and by contact with insects, animals, people, and equipment. It is persistent and difficult to control and eradicate. Canker can attack leaves, twigs and fruit of most United States citrus cultivars, causing defoliation, fruit drop and general decline of both nursery stock and mature producing trees. Florida is now in the midst of an eradication program following recent discovery of this disease in the State.

Methods: Members of the Panel traveled to Florida and met with the Commissioner of Agriculture, President of the Florida Farm Bureau, Director and staff of the Florida Division of Plant Industry (FDPI), representatives of the Florida Citrus Nurserymen's Association and the Citrus Grower's Association, Project Director and staff of the Citrus Canker Project, and with growers and nurserymen. We saw the facilities of the Division of Plant Industry at Gainesville and the citrus canker facilities at Winter Haven. Discussions were also held with PPQ personnel on site and at Hyattsville and with ARS and University of Florida scientists.

Findings: Citrus canker probably originated in southeast Asia and spread to Japan, South Africa, Australia, the Pacific Islands, South America, and our Gulf Coast States, where it became established in 1910. Canker was declared eradicated from Florida in 1933 after an expenditure of \$6 million to destroy 258,000 grove trees and 3 million nursery trees. In the Gulf States from Florida to Texas, a total of nearly 20 million trees in nurseries and groves was destroyed by 1934.

In September 1984, citrus canker was found in a nursery in Polk County and later in several other central and south Florida citrus nurseries which had received plant material from the initial location of infection. A cooperative eradication program was immediately begun by the Florida Department of Agriculture and PPQ with the support of the citrus industry.

There are at least three distinct strains or types of citrus bacterial canker as determined by pathogenicity tests on different citrus hosts. The "A" strain affects many rutaceous (the genus Citrus is in the family Rutaceae) and some non-citrus rutaceous hosts, including most citrus species and hybrids, especially grapefruit, Poncirus trifoliata, sour orange, Mexican or key lime, lemons, tangelos, and tangerines. The "B" strain affects lemons in Argentina, Uruguay, and Paraguay. However, Mexican or key lime, sour orange, Rangpur lime, sweet lime, citron and occasionally sweet orange and mandarins can also be affected. The "C" strain affects only Mexican limes in Brazil. The following tabulation shows the relative pathogenicity of three strains of the citrus canker organism, Xanthomonas campestris pv. citri, on five species of citrus.



Strains of X. campestris pv. citri

<u>Citrus</u> sp.	Common Name	A	B	C
C. <u>sinensis</u>	sweet orange	+++	+	-
C. <u>paradisi</u>	grapefruit	++++	+	-
C. <u>limon</u>	lemon	+++	+++	-
C. <u>reticulata</u>	mandarin	+	+	-
C. <u>aurantifolia</u>	Mexican lime	++++	++++	++++

- = no disease development

++++ = very pathogenic reaction

In 1981 a disease affecting Mexican lime occurred throughout the lime growing region of the Mexican State of Colima. Canker-like lesions occurred on leaves and twigs, but no lesions were found on fruit in the field. The causal agent of the disease was identified as a bacterium, but the origin and development of the disease, currently known as "bacteriosis", is not yet understood.

Citrus of Mexican origin was not allowed to be shipped into the United States for a time, but is now permitted from certain growing areas in Mexico under treatment protocols.

The causal agent of the 1984 citrus canker outbreak in Florida has a host range similar to the "A" strain but symptoms on the heavily fertilized nursery stock are slightly different from typical "A" strain symptoms.

Citrus canker has been eradicated from South Africa, Australia, and New Zealand using the techniques developed in the United States. Canker was intercepted 2,603 times at U.S. ports of entry from 1973 to 1978, according to Garnsey and others (Citrus Ind. 60:5-13, 1979). That rate of interception continued through 1980. The principal sources of canker interceptions are ships stores and passenger baggage. Stall and Seymour stated in 1983 that up to that time canker had not been detected on bud wood or other plant materials that had come through quarantine procedures (Plant Disease, 67: 581-585, 1983).

With the knowledge of the canker interceptions, the danger of canker on fruit from Japan and the epidemic in South America, representatives of ARS and PPQ and research and regulatory agencies of Florida and Texas met for a workshop in Washington in 1976. That meeting resulted in coordinated activity on the citrus canker problem. Scientists have conducted extended study in South American countries. This knowledge base and personnel coordination made possible the rapid response to the Florida outbreak.

California, Texas, and Arizona have each developed action plans for citrus canker in order to be ready if infestations occur.

During a visit by members of the Panel in late March 1985, we were told that no canker had been found in Florida since December 1984, although there were still some orchards and dooryard areas to be surveyed. However, canker was found in a nursery in Tampa in late April 1985. The infected plants were in three greenhouses of nursery stock. These

greenhouses had been inspected three times since December 1984, but the infected plants were not found until the third inspection. The process of eradication has been started, but not all plants shipped from this greenhouse have been located. The August find enlarges the investigation substantially due to the great number of shipments that must be traced from that nursery.

Conclusions: The State of Florida, PPQ, and the citrus industry worked rapidly, efficiently and effectively to initiate and carry out eradication of the citrus canker outbreak in Florida. Twelve million dollars of taxpayer money was expended on eradication by the end of July, 1985, but the August infection will raise the cost and loss significantly.

The disease was first found in nursery stock, but how it got there has not been determined. The fact that the strain occurring in Florida is not a typical "A" strain adds to the puzzle, particularly concerning its origin. The find in the Tampa area in late April is similar to the September, 1984, find in Polk County, but there are still some minor differences from that find and typical A stain. The August find is believed to have originated from the find in the Tampa area and could be the same strain. The origin of the initial outbreak has not been identified despite a strenuous effort to do so, but a continuing effort should be made to find the origin of the initial outbreak. Developing additional skills in epidemiology to determine the source exotic outbreaks, such as this case for citrus canker, is essential. The current survey and detection activities were not successful in detecting the initial Florida outbreaks, but did detect the August one. However, there have been criticisms that it was not found early enough. Detailed review of nursery inspection techniques needs to be carried out to make the system more effective.

The reports of citrus canker in Mexico indicate a mild form of the disease. The limits of the infected areas are difficult to locate and define. To-date, lesions have not been found on Mexican fruit. The Panel feels that in addition to this lack of information about limits of the areas in Mexico which are infested, the movement of citrus within Mexico poses a potential danger from this pathogen to the United States citrus industry.

The eradication system developed and in use in Florida is very thorough. The industry as well as FDPI and PPQ are to be commended for their cooperation and effectiveness.

Recommendations: (1) Research on all aspects of citrus canker should be continued and Federal/State emergency plans should be kept current. Continuing research will provide an information base for use in future outbreaks of this and other diseases. It should emphasize epidemiological knowledge of value to future control/eradication operations.

(2) PPQ should urge ARS to assist it in conducting epidemiological studies of citrus canker and/or bacteriosis in Mexico and the U.S. to define the extent of infection and its significance, so that effective precautions can be taken within Mexico to prevent its spread from the infected area.

## 14. Emergency Programs

Methods: The Panel has had extensive discussions with the PPQ staff, State regulatory officials, regulatory officials in several other countries, and international agencies on procedures to be used when infestations of dangerous exotic pests develop in the Country. We have also drawn upon our own experiences.

Findings: In spite of all efforts to exclude them, some exotic pests and diseases of plants and animals will find their ways into the United States. Unless resulting infestations are quickly discovered and eradicated, massive losses may occur. If such infestations "get away from us" and eradication procedures have to be abandoned, there is no alternative but to develop ways to live with them. Such a situation inevitably results in increased costs of production and higher prices to consumers. In some cases, the potential for exporting commodities that are hosts of exotic pests is totally lost.

The Federal Government has the primary responsibility for excluding exotic pests from the Nation. Inasmuch as early elimination of infestations is an integral part of the total exclusion program, it follows that the Federal Government, U.S. Department of Agriculture (USDA) in this case, has the primary responsibility for such actions. Emergency Programs in PPQ is charged with exercising responsibility for USDA. Of course, self interest dictates that affected States share in the responsibility. In order to be able to carry out this responsibility, PPQ continues to improve its capability to detect and eliminate infestations quickly. Some State regulatory agencies, similarly, are improving their capability to respond in concert with PPQ.

Conclusions: The Agency, through its Emergency Programs, has an enviable record for removing infestations of exotic pests from the Nation. Medfly in California and Florida and khapra beetle in several locations are good examples. In spite of our best efforts, infestations of exotic pests will appear from time to time. An efficient exclusion program will keep such occurrence at a low level. The Panel believes that in spite of the increased exposure explained in Section 7, an efficient exclusion program, based on the recommendations in this report, will result in fewer infestations of exotic pests than have occurred in recent years.

A fundamental point (Section 9) is the early detection of exotic pest infestations. The discovery of citrus canker in Florida is a good example. The longer it takes to detect an infestation, the wider it will spread and, therefore, the greater the effort and costs required to eliminate it. Hence, we cannot over emphasize the importance of a good detection system. As explained in Section 9, it is imperative that PPQ, working with the States, complete the national plant pest survey and detection system as soon as possible.

When the detection system determines the presence of an exotic pest, Emergency Programs must be prepared to "strike immediately" to remove the pest from the environment. The key to a successful exclusion



program is the capability to move into action at once. Obviously, the full cooperation of affected States is essential for a rapid and successful operation.

An early strike capability should employ teams of PPQ technical specialists and involve the State regulatory agency as well as ARS and appropriate SAES expertise. Simulated exercises need to be developed and conducted periodically. Specialists would assemble quickly in designated areas and establish contact with local authorities (local government officials, police, military units, etc.), determine availability and accessibility of supplies, equipment and facilities (hardware stores, pesticide dealers, rental agencies, petroleum products, etc.), and simulate deployment of resources under field conditions. Subsequent assessment would reveal obstacles that might be encountered if actual infestations are discovered. Different pests or diseases would require different simulated exercises. Simulated exercises are a highly effective method for keeping an early strike capability on a "ready" status.

With a highly effective exclusion program in operation, which the Panel fully supports, Emergency Programs should not be the genesis of many new Federal programs. Emergency Programs should implement previously designed plans for pests or diseases, accomplish its tasks quickly, and withdraw from the scene. This approach would prevent unusually long-term eradication programs that sometimes finally evolve into "just another Federal control program." We believe that investigations as to the source of infestations (epiphytology) should be pursued vigorously. Positive results from such investigations provide invaluable information on pest pathways. //

When the Emergency Programs Staff is not actively involved in combating an infestation of an exotic pest or disease, it should be seeking information on the significance of dangerous pests (from the list of dangerous pests we have discussed in other sections of this report) in countries where they are endemic and evaluate what is being done to control or eradicate them. Such information is fundamental as part of PPQ's emergency plans for such pests if infestations occur in the United States.

Emergency Programs should develop the finest skills in the world in detecting how exotic pests and diseases enter and spread within the Country. This is a professional skill that is severely needed to pinpoint the relationship between pathways and establishment of infestations.

Recommendations: (1) Maintain and support an Emergency Programs strike force capability. This would include not only the required technical specialists but also appropriate equipment and materials at strategic locations, a close relationship with State regulatory agencies in strategic States, and an information system that would assure full public support.

(2) Investigations as to the source of infestations of exotic pests and diseases and their methods of spread should be pursued with vigor. //

## 15. PPQ and State Regulatory Agencies

Traditionally, PPQ and the State plant protection agencies have worked closely together, particularly on domestic quarantine and pest control programs, and have been mutually supportive of the AQI Program. This relationship has been formalized by Memoranda of Understanding on overall plant protection program conduct and on individual programs. These arrangements have generally been effective with PPQ providing a share of funding, technical know-how, and equipment and the State agencies supplying some of the same plus legal authority and the development of local support.

Methods: The Panel utilized the National Plant Board system in gathering information on the relationship between PPQ and State regulatory officials. The plant protection officials of the fifty States and Puerto Rico were invited by letter to comment on the questions posed by the Assistant Secretary. Seventeen responses were received, most having comment on the relationship of PPQ to the State regulatory agencies. Additionally, the Panel was able to adjust its schedule to hold meetings jointly with the National Plant Board Advisory Council and PPQ Regional and Area Supervisors. At those meetings, many issues were discussed, a principal one being State-PPQ relations. The Panel also conferred with employees at various levels in the PPQ organization.

Findings: The National Plant Board, with its four regional plant boards, was formed over sixty years ago. Its purpose has been to provide a mechanism for achieving uniformity among the States as to quarantines and regulations, inspection methods, plant certification techniques, and other matters relating to plant protection and quarantine in an effort to minimize interruption of the movement of agricultural commodities among the States. More recently, the National Plant Board Advisory Council was formed. This organization consists of the chairmen and vice chairman of the National Plant Board and two members appointed from each of the four regional plant boards. Its purpose is to meet periodically with the PPQ Administrator to discuss issues of national plant quarantine significance.

A usual comment by State plant protection administrators was that PPQ domestic programs have declined in effectiveness and effortwise to the benefit of preclearance inspections on foreign imports, the International Programs, and emergency domestic programs. When domestic PPQ staff is temporarily assigned to other programs, the affected PPQ regions have difficulty in meeting their commitments to State-Federal cooperative programs. The involved States then find themselves with literally more than they bargained for in terms of program commitment. The increasing number of emergencies and preclearance inspection demands have aggravated this divergence from the agreed-upon State-Federal relationship. It is understandable that these pressures surface on the part of both Federal and State employees as criticisms of the preclearance, emergency, and International Programs.

Most State officials agreed that PPQ is performing reasonably well overall, with the resources at hand. Many also believe that the Agency could stretch its resources further by making more use of State capacity



and expertise by formulating cooperative contractual programs similar to those used by FDA, EPA, and USDA. These programs are time-tested, and the Federal agencies involved should be able to supply detailed information and advice concerning them. The FDA contracts with State Departments of Agriculture to conduct food and animal feed processing plant inspections; the EPA similarly uses State people for pesticide and pesticide user control; and the USDA contracts for egg and poultry inspection. In most aspects, these programs are the technical equivalent of the PPQ programs.

A serious point of difference between PPQ and regulatory agencies in the citrus producing States is the alleged transshipment of foreign citrus from restricted U.S. destinations to other parts of the Country, including the citrus States. This is reported to occur with citrus from Israel, Bahamas, and Morocco consigned to the northeast and with Unshu oranges from Japan consigned to non-citrus western States. Similarly, citrus infested with armored scale makes its way to Florida and has become a point of contention between that State and PPQ. Likewise, mangoes may be imported into New York and appear in markets in Miami and in other southern locations.

Although a special section of this report deals with communications, at the risk of reiteration, this important facet of State-Federal relations deserves additional emphasis. The Panel's interviews with both Federal and State personnel invariably stimulated comments concerning deficiencies in this important area. Of course, good communications must begin internally, but paramount to the interests of this report are PPQ communications with its State counterparts. Regrettably, the value of this interagency link apparently was depreciated by other factors when the decision on the restructuring of the PPQ field organization was made effective October 1, 1983. This decision eliminated the position of District Supervisor which was the closest supervisor-decision-making position to the States in the organization. This position, with a 1 to 2 State responsibility (except a New England district of 6 States and a western district of 4), was sacrificed, leaving in its place the Area Supervisor position with responsibility for PPQ programs in 4 to 5 States, on the average. Some have 6 or 7 States. These decisions had the effect of diluting the PPQ State relationship at a time when some separation was already occurring due to declining domestic program activity.

The Panel was told on numerous occasions about the frustrations of State regulatory and industry people relative to the present status of the gypsy moth, fire ant, and Japanese beetle programs. This has been responsible for the current discontent with PPQ among State regulatory officials. However, since domestic control programs were not part of the Panel's charge, we did not pursue this matter.

Conclusions: There is a real need for improved State-Federal cooperation between PPQ and the States of Hawaii and California. This is the conclusion of the Panel after studying the island-mainland fruit fly problem and the entry and establishment of 2 to 3 insect pests in Hawaii, annually. Certainly, something must be done to ease the exotic pest pressure on both Hawaii and the mainland.



*Does this mean \$'s?*

PPQ needs to stabilize some of its programs by initiating some contractual arrangements with the States similar to those of FDA and EPA. It is the Panel's opinion that such an arrangement could, in the long run, expand PPQ's present coverage and provide a more logical national network of inspectors authorized to inspect imported containers at devanning points, and to certify U.S. agricultural commodities for export. This would avoid having PPQ inspectors placed at locations without a full work load or with long distances to drive to make inspections or both. A State official, one of those who suggested the above said, "APHIS has had a closed, in-house system too long. They should look into the possibility of working with States to get the job done. It works for other Federal agencies."

Remarks by PPQ employees and State officials indicate that some changes in the 1983 restructuring of the Agency might be helpful in improving the outlook for domestic programs, would enhance communications with the States, and would improve employee morale and confidence. Considering the concurrent increased threat of exotic pest involvement, it is imperative that the PPQ-State relationship be the strongest ever.

Repeated comment by PPQ employees and State officials, concerning the transshipment of citrus and other tropical fruits allowed limited entry into the United States, demonstrates the need for reassessment of the limited entry policy.

Recommendations: (1) PPQ should implement a system of Federal/State contractual agreements, similar to those used by FDA and EPA, for such activities as export phytosanitary inspection and container devanning inspections, in order to expand its inspection services.

(2) With the exception of current authorizations, PPQ should not permit future importations into limited areas of the Country. The Panel understands the reasons for the current authorizations and the difficulties of rescinding them. However, due to the extreme difficulties of restricting imported products to other parts of the country, technical rationale can hardly support such a position. Since the restrictions placed on currently permitted importations apparently have not resulted in the introduction of pests and diseases, they should be allowed to continue.

## 16. Regulating Biotechnology Products and Processes

In recent years, many new techniques and products have evolved from what has come to be called biotechnology. The number of these processes and products is rapidly increasing. They must be properly evaluated for safety and effectiveness if the Nation is to receive the full potential benefits from them.

Methods: The Panel members have been exposed to developments in this area from their various backgrounds. We were also briefed by Dr. James Glosser, Special Assistant to the Administrator of APHIS. We reviewed a document addressed to Ms. Karen Darling, Deputy Assistant Secretary for Marketing and Inspection Services, from the Association of Biotechnology Companies (ABC).

Findings: The Association of Biotechnology Companies stated that it recognized the responsibility of USDA, APHIS, in regulating products and agreed with the APHIS position. However, the Association wants the Government to realize that there are marked opportunities for such biotechnological products. United States firms wish to pursue these opportunities with vigor. Success with such products and processes can add extensively to the Nation's economic growth. International competition is severe. Reasonable regulatory procedures need to be developed and promulgated quickly.

In the past, the requirements imposed by USDA to assure safety from pests and diseases were such that the time and costs involved became deterrents to companies seeking licenses or permits for such products. Many scientists questioned the need for such elaborate precautionary requirements. However, this conservative approach has been successful in the past, and the Agency remains cautious because Government will be blamed if pests or diseases are introduced by this pathway.

The Panel heard of similar conditions existing in relationship to other pest pathways and the government's attempt to block them. For example, the government has established procedures that are considered unnecessary by some scientists, so they ignore them and smuggle prohibited items into the country. According to industry's representatives, this is fast becoming the rule rather than the exception in biotechnology.

Conclusions: APHIS must continue to recognize that its first responsibility is to protect the agricultural resources of the United States. However, it must also be aware of the changes that are occurring in the areas that it regulates and be fully appreciative of the advances that are taking place.

The persons enforcing the regulations on the products and processes of biotechnology must have or be able to quickly obtain up-to-date competent information and expertise on the various techniques involved. In biotechnological processes and products this can require continuing education. APHIS regulators must also seek counsel and advice from those considered to be experts in the area.

In the case of foreign pest exclusion, the Agency must be assured that the products coming into the country will not result in an outbreak of pests or diseases that may take millions of dollars to eradicate. On the other hand, procedures required to assure safety need to be scrutinized closely to determine whether such regulatory activities may be modified and still provide safety without adversely affecting the ability of U.S. industries to compete with their foreign counterparts. Particular attention should be paid to unnecessary delays in the approval process and increased costs of getting a product approved.

In the past, the Agency may have been somewhat indifferent towards the motivation and objectives of industry. However, as this Panel has heard from several persons and organizations, it must also be concerned about the economic factors of the process and procedures being regulated. This does not mean that it should become more lenient. It means the Agency should strive to accelerate the approval process without reducing safeguards.

This situation is more urgent now than in the past because the new market potential for biotechnology products is far higher than was ever contemplated in the past. The international competition by Europe and Japan is such that if the United States requirements are too restrictive, vast markets could be lost and the economic ramifications could be significant. APHIS must continue to require measures to block the introduction of pests and diseases of plants and animals that may cause great economic loss to agriculture. At the same time the Agency must be fully aware of the benefits to be derived economically by the United States if domestic firms are able to capture the market of these new biotechnology products.

The report made by ABC, Ad Hoc Working Group, is encouraging as to the approach being taken by APHIS with them at this time. The recommendations proposed in the ABC Ad Hoc Report appeared to have merit and need indepth evaluation by APHIS. Briefly, they seek assurance that USDA research capabilities are integrated into any pre-market approval process and the adoption of procedures which will expedite importation of biotech-derived cell lines and their products without compromising quarantine integrity, for example, testing cell lines and cell culture products in non-USDA labs, classification of imported cell lines and cell culture products by their intended uses and risks to agriculture, and availability of verifiable documentation and compliance with other regulatory requirements.

The proposals are not new. Similar proposals have been made in the past concerning what is now called conventional methods. However, times change and tradition should not be the basis for ignoring modification of past procedures.

The Panel heard from other sources about the need for more USDA-approved diagnostic laboratories in foreign countries. It was suggested that such laboratories could be bonded or recognized worldwide for the competence and integrity required.



The Agency needs to recognize the urgency to get products approved promptly in addition to fulfilling its safety responsibilities. It should involve all competent authorities within the U.S. Department of Agriculture to assist in resolving the problem. Such authorities should be active participants in any further discussions that take place between government and industry representatives.

APHIS should acknowledge that this area of specialty warrants continuing education. Personnel employed in these activities must not only be fully competent but appropriately educated and trained.

APHIS should do all it can to communicate to the scientific community the danger associated with bringing biological agents into the country illegally. Communication should be immediate and continuous with the scientific community so that those who import such agents into the country are not unintentionally violating regulations.

Recommendations: (1) APHIS should take the lead in regulating biotechnological products or techniques that may be responsible for agricultural pests or diseases being introduced into the United States. Procedures should be developed for working closely with industry groups that are developing or have already developed such products or processes.

(2) APHIS should make a special effort to assure that its personnel are well qualified to regulate these types of products.

(3) APHIS should involve all competent authorities within the U.S. Department of Agriculture to assist it in meeting this pressing challenge to governmental regulation of imported products.

(4) APHIS should place high priority on developing a program to inform the scientific community on this matter.

## 17. Pest Risk Analysis

Pest risk analysis is a process whereby the biological factors that impinge on the probability of introduction and establishment of an exotic pest or disease are integrated into one overall probability (calculated risk).

Methods: The Panel discussed risk analysis with many regulatory officials and other scientists, had extensive discussions among ourselves, and reviewed the McGregor Report and other publications. One of the most precise publications on pest risk analysis was prepared by Dr. R. P. Kahn in 1979. We have drawn heavily on that paper for our discussion of the topic.

Findings: A regulatory organization, such as PPQ, is required to determine the entry status of imported items. Weighing the various biological factors that are related to inadvertent introduction and subsequent establishment of a pest organism is a highly involved procedure, but when economic, political, and social considerations are involved (which they inevitably are), making a determination on entry status of imported items becomes an unenviable task. The problem of excluding exotic pests is further complicated by other factors, such as passenger baggage and mail parcels, when the Agency does not know what pest host materials may be involved. In addition, common carriers (ships, airplanes, vehicles, etc.) and cargo containers may move certain pests, even though there may be no pest host materials aboard them. Nevertheless, a determination of entry status for every imported agricultural product must be made by PPQ.

There are some obvious biological factors involved in pest risk:

- (a) Inspection methodology (sampling, search procedures on samples, number of inspectors, etc.). We discussed this factor in Section 4 of this report.
- (b) Availability and effectiveness of treatments if an exotic pest or pathogen is found by inspection. As set forth in Section 8, the Agency finds itself with fewer and fewer effective pesticides.
- (c) Presence of exotic pests and knowledge about bionomics and control in the country of origin before the product can be imported. We have stressed the importance of this information in other places in this report (Section 11 and 12).
- (d) The probability of a pest organism becoming established after inadvertent importation and the probability of detecting the established infestation before it spreads over a wide area of the Country are highly important considerations in determining pest risk.

Determining the probability of establishment of an infestation of a pest organism is a highly complicated matter. Let us consider one hypothetical example. An over-ripe medfly-infested mango is tossed into a garbage can in Miami. In a few days an adult medfly crawls from the garbage can and flies away. Is this single fly capable of starting an infestation? There are several seemingly indeterminable factors, all of

which must be determined, before the questions could be reasonably answered. What is the sex of the fly? If it is a female, is it sexually mature? If so, has it mated? If it has not mated, will it escape inclement weather, natural enemies, etc., and make its way to an environment (infested fruit situation) where a mate may be present? If mating occurs, and if the fly is a female, will it survive its enemies, etc., until egg maturation? If it survives until then, will there be fruit present that is attractive for oviposition? If so, and eggs are laid, will the fruit be picked and consumed before the resulting larvae mature, pupate, and emerge as adults? When the numerous variables are considered, one can see that there is no absolute answer to what might appear to be a simple question. What is the minimum number of medflies under a given set of conditions that will result in an infestation? Two or three or ten? The answer is less than absolute. The situation regarding plant pathogens is just as complex, but with host availability a primary matter.

We have discussed the matter of detection of established infestation of pests in Section 9 of this report.

Theoretically, if the various factors that ultimately impinge on the establishment of infestations of exotic pests and their relative importance could be quantified, it would be possible to arrive at a probability (odds) figure for use in determining the entry status of various foreign products. If the odds for a product were unacceptable, then that product would be barred from importation until the odds could be lowered to a more acceptable level (less pest risk). It is obvious, of course, that the pest risk cannot be lowered to zero for any imported product (Section 4).

There is not sufficient information (and there probably never will be) about pests and host products to establish unequivocal numerical values on the probability of establishment of infestations. This does not preclude assignment of values on a subjective (logic and experience) basis. As a matter of fact, PPQ arrives at its entry status requirements by logic and experience after weighing known tangible and intangible factors. Obviously, the Agency would have greater confidence in its operation if such decisions could be actually reached "by the numbers". Even if subjective numerical values could be established for a particular product at a specific time from a designated country, it must be recognized that the world pest situation and transportation technology are dynamic. Changes are occurring constantly and status of entry requirements must change also. Hence, the Agency must continue to seek more information that will provide better technical support for its subjective decisions.

Conclusions: PPQ must establish entry requirements for agricultural products and such requirements must reflect the perceived pest risk. There are not enough scientific data (and probably never will be) to enable the Agency to calculate nonrefutable odds that a pest infestation will not result from a particular set of entry requirements. In view of the obvious requirements for entry status for imported products, PPQ follows what appears to us to be the only viable alternative, an admittedly mostly subjective pest risk analysis based on known information, logic, and experience.



## 18. Pest Exclusion from Hawaii

Methods: The Panel held conferences with representatives of industry, growers, and plant regulatory officials in Hawaii and California about the strategic position of the State of Hawaii in connection with exotic pest exclusion. We also talked to scientists from the University of Hawaii and the ARS Tropical Fruit and Vegetable Research Laboratory in Honolulu.

Findings: Hawaii is an island State in the Pacific Ocean, located some 3,000 miles west of the U.S. mainland. The State is exposed to pests from the mainland, but more importantly it is exposed to pests from the Pacific islands and Asia to the west. About 25 new species of insects alone (not including other potential pest forms such as fungi, bacteria, nematodes, viruses, mycoplasmas, and weeds) are found in Hawaii each year. Two or three of these new insect species usually turn out to be destructive pests. Most of these new species are suspected to have found their way to Hawaii from Pacific Rim Countries to the west or southwest. Inasmuch as the State is tropical, there is great opportunity for introductions to develop into infestations throughout the year.

This constant onslaught of pests into Hawaii creates a continuous pest management problem for Hawaiian agriculture. New pests have to be researched to develop management technologies which, when determined, add to the costs of production. The presence of new pests in the State also results in potential problems of quarantine on products that move to the other States or other countries where the pests do not occur.

Conclusions: Hawaii, because of its location, receives the brunt of the movement of exotic pests from the Pacific Rim Countries. The problem is confounded by the great increase in movement of people from these areas inasmuch as they tend to bring along their native foods, much of which can be infested with exotic pests. Not only does this situation result in constantly increasing problems for agriculture in Hawaii, it also results in a constant danger of introduction and establishment of pests on the mainland.

It seems to the Panel that a significantly stepped up exclusion program for Hawaii is indicated. An improved and vigorous exclusion effort for Hawaii would not only reduce the problems in that State but would also reduce the potential for further invasion of the mainland. We are aware that putting a much "tighter net" around the State will not be easy, simple, or inexpensive. However, when viewed from the standpoint of need and potential pay-off, it is a logical approach. We are also aware that the State of Hawaii could hardly be expected to "go it alone" in such an endeavor as might be done in the State of California or Florida. However, a joint program between the State of Hawaii and PPQ, with probably a disproportionate share of resources being provided by PPQ, would not only benefit the entire Nation but would be completely compatible with PPQ's mission.

Recommendation: Plan, develop, and execute jointly with the State of Hawaii a more effective exclusion program for the State of Hawaii.

## 19. Communications

Methods: Communication is defined as the giving and receiving of information by talk, gesture, writing, and so forth. With this definition in mind, the Panel attempted to assess the effectiveness of PPQ as a communicator. The Panel interviewed individuals both within and outside the Agency. Within the Agency, the Panel interviewed individuals at all levels from Inspector to Administrator. Some of these individuals had line and others staff responsibility. When possible, this was done at the work site. Those interviewed outside the Agency included representatives of state, national, and international agencies with which PPQ has contact. Representatives of many industries with activities regulated by PPQ were interviewed or invited to express their comments in correspondence.

Findings: The Panel found PPQ to be very effective in communicating new specific regulations for pests which are already receiving media coverage, for example, the Mediterranean fruit fly and citrus canker. Communications on older, more routine activities such as gypsy moth, witchweed, cargo, and baggage inspection were found to be minimal.

It appears some State scientists are not informed of or choose to ignore PPQ regulations for importing plants, pests, and pathogens.

Communication with importers is apparently limited to that associated with obtaining a permit to import. Generally, the importer does not fully understand the reasons for requiring a permit.

PPQ communication with foreign exporters and the plant protection officials of the exporting country apparently specifies the regulations without effectively indicating the plant protection reason for them.

AQI officers, both at home and abroad, complained that quite often regulated industry and the public learn of changes in regulations and other information before they do. For example, an overseas IP officer reported his effectiveness was reduced because he was not notified of a critical pest find in the United States until after it had been announced by the press in that country.

Press releases summarizing the legalistic Federal Register announcements, while well done for detail, are not widely quoted in industry journals and other periodicals.

Industry members who do not have regular contact with PPQ regulations have difficulty understanding the regulations or choose to ignore them.

In communicating with other agencies and departments within the United States, PPQ is often perceived as being unduly inflexible and unwilling to recognize the other agencies' assigned responsibilities. Prime examples are EPA and USPS.

The ineffectiveness of the outdoor household article regulations in the gypsy moth quarantine was quoted as the result of poor communication.

A Panel member attending the Southern Plant Board meeting learned of the lack of enforcement of the imported fire ant quarantine when a receiving State intercepted the pest numerous times and failed to inform the local PPQ Officer or the six shipping States.

The PPQ reorganization, which eliminated the District Supervisor position, has intensified communication problems between PPQ headquarters and the State cooperators.

IP officers state they have trouble getting routine PPQ information through U.S. embassy offices.

In California, much of the enforcement of Federal regulations is carried on by the County Agricultural Commissioner's staff under the supervision of CDFA. In meetings with officials of CDFA and the County Agricultural Commissioners, the Panel observed some of the communication difficulties that are created by an additional organizational entity.

Considerable tax dollars are spent on domestic programs to control or eradicate exotic pests which have or could enter the United States in travelers baggage, yet the travel and tourist industry do not willingly cooperate by helping inform the traveling public about the potential pest risks associated with this pathway.

Conclusions: While added personnel and budget are needed by PPQ for communicating with regulated industries and the general public, there is much PPQ could do with current resources to improve communications.

The Agency needs to concentrate on keeping information on changes in regulations and progress in control and eradication activities of the older programs in the hands of the press in those sections of the country affected or potentially affected.

Importers need information on the purpose of regulations if they are to willingly comply. Likewise, foreign exporters and their regulatory officers need to be informed of the purpose of the regulations as well as the details of them.

Both the requirement and accepted practice of communicating within the Agency in eschelon sequence may sacrifice needed timeliness.

In communicating with other governmental agencies perhaps PPQ should indicate a greater willingness to recognize that other agencies have assigned responsibilities and to cooperate when it is in the best interest of both agencies. A willing cooperator generates return cooperation.

Interesting, informative press releases in the hands of editors of industry newsletters and various trade journals are quoted. Advance notice by phone or personal note often assures the use of important press releases.

Poor or incomplete communication can result in ineffective regulation because of misunderstanding or even hostility.



The lack of willingness of PPQ officers to give the outdoor household article regulations of the gypsy quarantine a reasonable try has resulted in only limited compliance by householders moving from infested areas to non-infested areas of the country and by the carriers moving them.

More timely and wider distribution of the monthly APHIS enforcement bulletin would be helpful in reaching university scientists, arboreta, botanical garden curators, and industry members. Knowledge that a regulation is being enforced should improve compliance.

Greater effort should be made to reach the travel industry and tourists with information on the importance of not importing fruits, vegetables, and animal products which could be the vectors of hazardous plant and animal pests. Better promotion of the use of signs, information leaflets, and press coverage of detector dogs and x-ray scanners by individual PPQ employees is needed. Successes in effectively reducing movement of contraband items needs to be passed on to the Information Division for relay to other employees and to traveling public.

PPQ Regional and Area officials should be encouraged to speak on PPQ activities at meetings of service clubs, industry associations, professional societies, plant societies, high schools, and college groups.

Encourage States that intercept pests covered by Federal quarantine to report those interceptions to both the shipping State and local area PPQ office.

The Agency should monitor its communication system until it has become more effective.

Recommendations: (1) Place greater emphasis in employee training seminars and conferences on the ways the individual PPQ employees can assist in improving communications with PPQ cooperators and the public.

(2) Increase the use of computer networking to speed up, increase, and improve accuracy of inter-agency communication.

(3) Make timely and wider distribution of the monthly enforcement action report to the trade press, periodicals, newsletters of related industries, and to professional societies and amateur plant groups.

(4) PPQ should develop a comprehensive list of PPQ communication receivers that need to be reached with information on current activities and proposals so that all segments of industry receive PPQ information pertinent to that industry.

## 20. Training

Methods: The Panel visited the Professional Development Center at Frederick, Maryland, and was given a briefing and tour of the facility. We also had the opportunity to discuss training with personnel at all the PPQ facilities we visited. We visited major locations on the east coast, from Texas to California along the Mexican border, up the Pacific coast to Vancouver, BC, and the Michigan-Canadian border. We also had an opportunity to talk with many State regulatory people and with industry and trade groups.

Findings: Source material indicated that 1.5 percent of PPQ's current budget is for training with almost half coming from AQI. The permanent training staff of 24 employees consists of 22 at the Frederick location and two at the Federal Law Enforcement Training Center at Glynco, Georgia. The Frederick facility is quite new, and the physical facilities are excellent. Activities include classroom instruction, regional workshops, self-instructional materials for field locations, instructor led training at work sites, traditional classroom instruction and on-the-job training for foreign agricultural officials at overseas locations. The Frederick facility trains 75-150 new officers per year.

Some people in the field complained that the training program was not selective enough. Officers with long experience, in particular, felt that some of the new people did not demonstrate appropriate skills for the job and should not have been accepted for permanent assignment. As has been stated elsewhere in the report, AQI inspectors are well trained and exceptionally well motivated. This speaks well for the training program of PPQ. It is our impression that the formal training programs at Frederick are of rather recent origin.

A concern, expressed at several inspection stations, was that specialists (for example, identifiers) often do not have understudies coming along to replace them. However, the Agency training plans provide for "individual preparation by one-on-one on the job training for highly specialized skills."

Conclusions: The training program of PPQ has, in general, responded admirably to the requirements of AQI in a time of rapid change and challenge, e.g., cargo containerization, plant propagation materials, changing origin of imports, international programs development, and inspection at points of origin.

The instructional materials seem to be "legalistic" in form. While this is very necessary for a regulatory organization, a more direct form for presenting scientific and technical information would be more effective to trainees.

A computer assisted communications system, which can be used for training, has been put into use for some locations. The training center hopes to expand the materials available for self-training of employees at field locations.

There is some question about the practicability of some PPQ training programs, such as the one on ecology. However, there is a need for more

specific training on such things as the identification of exotic pests (insects, weeds, and nematodes), as well as endangered species.

Good, single sheet illustrations of symptomology, which trainees or inspectors would encounter on the job, should be included for pests in the excellent "Pests Not Known to Occur in the United States or of Limited Distribution," APHIS Series 81-45.

Individual on-the-job training can be used to fill specialized assignments.

Recommendations: (1) Continue to emphasize training of AQI personnel including continuing education of experienced employees.

(2) Include in the training element on International Programs, lectures for trainees by experienced returning overseas personnel relative to the benefits to U.S. agriculture derived from their foreign assignments.

(3) There should be a complete training program review every three years to insure that the training received by new officers is appropriate to the challenges in the changing environment in which they work.



## 21. Advisory Groups

Decisions of a technical nature become more important daily as new breakthroughs in science occur. Decisions of this nature by Government have become more suspect since the time of Rachel Carson's book "Silent Spring," and since Vietnam and Watergate. Therefore, the Government needs to regain the confidence that the public once had in its technical decisions.

Methods: The Panel read various study group reports and numerous articles in the agricultural press relative to technical problems confronted by PPQ in the Agricultural Quarantine Inspection program. We contacted representatives of the State Departments of Agriculture, the Plant Protection and Quarantine staff, other agencies within USDA, industry and various other groups.

Findings: Several groups advised that PPQ has numerous complicated technical problems that are very controversial. From the correspondence and articles written about Quarantine 37, it became obvious that the technical presentations on the question depended on whether or not those involved were motivated by the domestic or international markets. Stated another way, it depends on whether one is for or against expanding importations of agricultural commodities.

The Panel understands that the use of technical committees by the government that consist of experts outside Government are the exception rather than the rule.

The Panel was informed that APHIS is presently challenged by the development of biotechnological techniques and agents that will be regulated and that the companies involved questioned whether there is competent personnel within APHIS to promptly resolve the technical problems that have already developed.

The Panel was impressed with the technical staff at headquarters and its knowledge of the current technical problems facing PPQ. On the other hand, some questioned whether the technical staff is able to keep current on new technical advances due to the demands on their time by urgent program problems.

When the Panel inquired about the establishment of a list of the major pests and diseases of plants as recommended by the McGregor Report 12 years ago, we were advised that it was not produced because there was not a consensus within PPQ to develop such a list.

The Panel was advised that Emergency Programs, for example, place PPQ's technical decisions in the limelight which makes it important that they be of the highest possible quality.

Conclusions: The decision makers who are trying to be objective, which the taxpayers of this country expect of Government, must do all they can to get all of the facts relative to various issues they face. Historically, those in Government operate under a cloud of suspicion by some of the activists in our country and the suspicion is frequently

communicated to the public by the various media. Because of such repetitious exposures, much of the public has developed certain prejudices. This undermines the public's willingness to accept Governmental evaluations and actions. All agencies must try to find ways to regain the confidence that the people once had in our Government.

Seldom do the media report the news of a consensus of scientists on a technical subject. Rather, they tend to quote some well-known authority who supports the view they wish to portray. A consensus among scientists usually integrates different views on a topic and represents a more objective evaluation. Such an approach is not popular with news media because a consensus usually shows that the facts do not warrant drastic action in a certain direction. If a group of scientists determine that more research is needed before definitive action should be taken, they usually specify what appropriate action should be taken in the meantime. The media interpret this as procrastination.

In recent years, Government has seldom used outside technical committees. As a consequence, problem solving is usually done within the agencies. Results are frequently highly suspect by the public and the industries involved. Outside groups can serve a worthwhile purpose if they are properly used. There are various segments of the industries regulated by PPQ. Many segments of the industry work with recognized and qualified scientists who have excelled in their areas of agriculture. These scientists are also recognized by their peers as well qualified and respected. Their recommendations are more apt to be accepted by their peers and the segment of the industry they represent.

Such outside specialists should be used to aid in problem solving but not decision making. Decisions must remain with the section of Government that is responsible for the regulation. Also, the work of these groups must be limited to the technical areas, not set Government policy.

Such a group could have developed the list of most dangerous pests recommended by the McGregor Report. The Government would then have had a badly needed list but one that was developed by an outside group of technical experts.

Those segments of industry regulated by PPQ need to have more confidence in the technical decisions being made by the Government. They are more likely to comply with regulations if they believe that the decision makers are receiving the best technical advice.

Recommendations: (1) The Secretary of Agriculture should appoint a Technical Advisory Panel (TAP) of about ten highly competent technical experts who are recognized as such by the industries that PPQ regulates. This panel would be designated to advise PPQ on technical problems relating to exclusion of exotic pests and diseases. It should consist of members who represent both sides of issues to be resolved. This panel should report to the Deputy Administrator of PPQ. It would meet at least biannually and be bipartisan in its makeup. Special sub-groups should be established from time to time by the Panel to evaluate technical problems that require specific expertise.

(2) PPQ should have an Interagency Technical Advisory Team (ITAT) consisting of a cross section of its staffs, ARS, CSRS and other USDA agencies. It would identify technical areas confronting PPQ relating to the various pathways, pests and diseases that can be introduced into the Country, and the best defense to minimize their introduction. This would be a continuous function.

(3) Once TAP recommendations are approved by the Deputy Administrator of PPQ, ITAT should monitor their implementation and report to TAP at least once per year.



## 22. Resources

Methods: The Panel heard from the Deputy Administrator and staff of PPQ and others in the Washington area. It also traveled nationally and internationally to observe the implementation of the Agricultural Quarantine Inspection (AQI) programs. Interviews were conducted at various levels within USDA as well as with persons and organizations associated with AQI programs.

Findings: Over the years, the Department of Agriculture and Congress have recognized the threat that foreign pests and diseases of plants and animals pose to the United States. Funding allocated to the AQI program has increased since 1954. To illustrate, \$2,671,532 was appropriated for this purpose in 1954; whereas, in 1985 estimated obligations were \$52,235,000. The amount of \$53,750,000 has been requested by APHIS for 1986, an increase of about 2.8 percent.

The funding level for AQI increased about twenty-fold in the last 30 years. On the surface, it would appear that the current level of funding is reasonable. However, as we have pointed out in Section 7, the massive increases in the volume of people and cargo that come into the United States, the changing areas of the world from which the people and cargo originate, and the revolutionary changes in technology to accommodate this massive inflow to the Nation have multiplied and complicated our exposure to foreign pests and diseases manyfold. As a result, introductions of exotic pests and diseases has required millions of dollars to be spent on unplanned emergencies. This funding is substantial compared to the total funds appropriated for the Agency. The recommendations of this report are designed to reduce these costs in the future.

We have identified some 14 major problem areas with which the Agency must deal in order to provide an effective exclusion net against exotic pests and diseases. Some of them can be resolved, or significant progress made toward resolution, within current budgetary levels. Progress on other highly significant problems can be achieved only with increased funding.

Conclusions: The Panel is aware that, if implemented, many of the recommendations in this report will require a significant increase in funding, as well as some probable changes in emphasis within the current budget level. We are also aware of the President's desire and the need for reduced Federal expenditures. After working on this Panel for nearly a year we feel that we have an accurate picture of the requirements for an improved and acceptable exclusion program for exotic pests from this Nation. Circumstances have changed so much in recent years that significant changes are essential if the Agency is to do a creditable job. In short, APHIS must have a significant funding "shot in the arm" or the Nation must face the unpleasant probability of an increasing number of serious exotic pest infestations which would result in hundreds of millions of dollars for eradication programs, increased food costs, and likely adverse environmental effects. This is not theory, as the record over the past 10 years will show.

The Agency should re-evaluate the funding of current operations and put greater emphasis on the most pressing needs in exclusion operations. As a Panel, we would not presume to be specific, but our recommendations in the foregoing Sections reflect our concerns about the most significant needs.

The Agency, without significant increases in funding, cannot procure appropriate numbers of x-ray detectors, train and use detector dog teams, buy computers in the numbers required, increase inspection-at-origin operations, refurbish facilities such as those at Moore Air Force Base in Mission, Texas, complete the plant quarantine facility at Beltsville, bear a major part of the exclusion program in Hawaii, carry out an effective public information program (in addition to the funds from fines as recommended in Section 3), and eradicate the tri-fly complex from Hawaii, as well as other needed new thrusts. Increased funding for operational costs, personnel, and pressing capital needs, where indicated, should be requested. We are not suggesting that all of these items be done with one large budget adjustment, but increases should be requested as rapidly as logistics indicate the work can be accomplished.

Recommendations: (1) There should be a substantial increase in funds to improve the AQI program over the next five years in order to adequately defend the agricultural resources of the Country from exotic pests and diseases of plants.

(2) The Panel recommends that PPQ direct funds from some of its lower priority activities in order to take some immediate action on our more urgent recommendations. However, the Agency should also develop a five-year budget plan to implement the bulk of the recommendations as a component of its long range program.

23. Plan to Streamline and Stabilize Agriculture Quarantine Inspection Operations

Methods: A document with the above title, prepared by the Field Operations Support Staff of PPQ in January 1985, was distributed to the Panel in March 1985. We have reviewed it carefully and feel that some commentary is appropriate.

Findings and Conclusions: The Panel is delighted that PPQ has seen the need for a good in-house study for both improvement of efficiency in operations and for more efficient use of funds. We congratulate the FOSS group for a good job. As can be seen in our report, we do not necessarily agree with every proposal on every topic. However, in general it was interesting to us that most of the items touched on in the FOSS report are also mentioned in our report. To us, this means these items need attention by the Agency.



## Appendix A

### Acronyms and Abbreviations

ABC	Association of Biotechnology Companies
ACCEPT	Automated Cargo Clearance and Enforcement Processing Techniques
AID	Agency for International Development
APHIS	Animal and Plant Health Inspection Service, USDA
AQI	Agricultural Quarantine Inspection
ARS	Agricultural Research Service, USDA
ASIST	Agricultural Source Inspection and Surveillance Technique
ATAA	Air Transport Association of America
CDFA	California Department of Food and Agriculture
CINCPAC	Commander in Chief, Pacific
CNPPDS	Cooperative National Plant Pest Detection System
CNPPSDP	Cooperative National Plant Pest Survey and Detection Program
CPPC	Caribbean Plant Protection Commission
CPPR	Cooperative Plant Pest Report
CSRS	Cooperative State Research Service, USDA
CY	Calendar Year
DEA	Drug Enforcement Agency
DOD	Department of Defense
EEC	European Economic Community
EEl	Expected Economic Impact
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
EPP0	European Plant Protection Organization
ERS	Economic Research Service, USDA
FAO	Food and Agriculture Organization
FAS	Foreign Agricultural Service, USDA
FDA	Food and Drug Administration
FDPI	Florida Division of Plant Industry
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FOSS	Field Operations Support Staff
FPPA	Federal Plant Pest Act
FS	Forest Service, USDA
FY	Fiscal Year
GATT	General Agreements on Trade and Tariff
HDA	Hawaii Department of Agriculture
IATA	International Air Transport Association
IICA	Inter American Institute for Cooperation on Agriculture
IP	International Programs
IPPC	International Plant Protection Convention
ITAT	Interagency Technical Advisory Team
LA	Letter of Authority
MAF	Ministry of Agriculture and Fisheries
MAFF	Ministry of Agriculture, Forestry and Fisheries
NAFC	North American Forestry Commission
NAPPO	North American Plant Protection Organization
NASDA	National Association of State Departments of Agriculture
NOT	New Officer Training
NPBAC	National Plant Board Advisory Committee
OICD	Office of International Cooperation and Development, USDA

OIRSA	Organization International Regional Salud Agropecuaria
OMB	Office of Management and Budget
PAG	Preclearance Advisory Group
PIL	Enhanced Primary Inspection Line
PIN	Pest Identifiers Notebook
PINET	Pest Information Network
PL-480	Public Law 480
POA	Port of Arrival
POE	Port of Entry
POUSNE	Pest Organisms of the United States and their Natural Enemies
PPQ	Plant Protection and Quarantine
PPSSCC	Presidents Private Sector Survey for Cost Control
PQA	Plant Quarantine Act
Q-37	Quarantine 37
R&D	Research and Development
SAES	State Agricultural Experiment Stations
SAG	Servicio Agricola y Ganadero
SPC	South Pacific Commission
TADS	Technology Analysis and Development Staff
TAP	Technical Advisory Panel
TF	APHIS Task Force which reviewed the McGregor Report
TSUS	Tariff Schedule of the United States
USAF	United States Air Force
USCS	United States Customs Service
USDA	United States Department of Agriculture
USDC	United States Department of Commerce
USPS	United States Postal Service
VS	Veterinary Services
WHIAD	Western Hemisphere Immigrant Arthropod Data Base

## Appendix B

People with whom the Panel conferred or who otherwise had input for the study.

Bobby Acord, APHIS, Washington, DC  
Andrew Adams, APHIS, Sacramento, CA  
William G. Adams, Adams Citrus Nursery, Inc., FL  
Bonnie Aikman, APHIS, Washington, DC  
Paul Aitkenhead, British Plant Protection, Harpenden Lab, England  
S. A. Alfieri, Florida Department of Agriculture and  
Consumer Services, Gainesville, FL  
Joan Alling, APHIS, Hyattsville, MD  
David Amrod, British Columbia Department of Agriculture,  
Vancouver, British Columbia  
C. M. Amyx, APHIS, Hyattsville, MD  
Phillip J. Anderson, Hortex, Auckland, New Zealand  
Rolland E. (Bud) Anderson, Agriculture Counselor, FAS, USDA,  
Den Hague, The Netherlands  
Melissa Arnold, California Grape and Tree Fruit League,  
Fresno, CA  
F. Araya, Grape Grower, Chile  
Nick Ashmore, House of Representatives, Agriculture Committee Staff,  
Washington, DC  
Alvin C. Ashorn, Texas Department of Agriculture, Austin, TX  
Ed L. Ayers, APHIS, Mexico City, Mexico

R. R. Backus, APHIS, Washington, DC  
Charles Baker, British Plant Protection, Harpenden Lab, England  
Jamie D. Baird, MAF, Wellington, New Zealand  
R. M. Baranowski, University of Florida, Homestead, FL  
John Barnes, CSRS, Washington, DC  
Douglas Barnett, APHIS, Hyattsville, MD  
Ed Bartley, APHIS, Miami, FL  
Henry Bauman, USPS, Washington, DC  
Jorge Benavides, SAG, Chile  
V. D. Belcher, APHIS, McAllen, TX  
John Bell, Canada Department of Agriculture,  
Vancouver, British Columbia  
Phillip Benedict, Vermont Department of Agriculture, Montpelier, VT  
Leo Berbee en Zonen, Bulb Exporter, Lisse, The Netherlands  
Alan Bernard, Florida Nurserymen and Growers Assoc., Orlando, FL  
Clare Berryhill, CDFA, Sacramento, CA  
Roger Birdsall, San Bernadino Co. Agriculture Commissioner,  
San Bernandino, CA  
Ray Bjornson, Montana Department of Agriculture,  
Helena, MT  
John Block, Secretary of Agriculture, USDA, Washington, DC  
Hilverda Bloeman BV, Cutflower Exporter, Aalsmeer, The Netherlands  
G. H. Boersma, Netherlands Plant Protection, Wageningen,  
The Netherlands  
Richard Bollinger, APHIS, Charleston, SC  
Herbert Boltin, Florida Citrus Nurserymen Association, FL



Ed Bolting, Nurseryman, FL  
 H. D. Bowman, APHIS, Jacksonville, FL  
 Fran Boyd, Congressman McMillan's Office, Washington, DC  
 Lukas Brader, Plant Production and Protection, FAO, Rome, Italy  
 R. A. Bram, ARS, Beltsville, MD  
 Gebr. Braam BV, Fern Exporter, Aalsmeer, The Netherlands  
 Charles Braun, USPS, Washington, DC  
 J. R. Brazzel, APHIS, Mission, TX  
 C. E. Breckner, APHIS, Miami, FL  
 Carolus Brown, Fruit Grower, Chile  
 Julian Brown, MAF, Wellington, New Zealand  
 H. J. de Bruin, Netherlands Plant Protection, Wageningen,  
     The Netherlands  
 Dean Bushinger, Irvine Company, Irvine, CA  
 Tom Bundy, USDA, Office of the General Counsel, Washington, DC  
  
 Phillip Campbell, Canada Department of Agriculture,  
     Vancouver, British Columbia  
 C. E. Carlson, Iowa Department of Agriculture, Des Moines, IA  
 Gary Carr, Alabama Department of Agriculture, Montgomery, AL  
 W. H. Carlson, Bedding Plants, Inc., Okemos, MI  
 Bill Castle, Citrus Nurseryman, FL  
 Stan Cath, American Seed Trade Association, Washington, DC  
 Barbara Chambers, APHIS, El Paso, TX  
 A. K. Chock, APHIS, The Hague, Netherlands  
 Dr. Luigi Chlaradda, Plant Protection Service, FAO, Rome, Italy  
 Bernard Charpentier, French Plant Protection Service, Paris, France  
 Ron Cipolla, USDA, Office of the General Counsel, Washington, DC  
 Pat Cockrell, Florida Farm Bureau, FL  
 Roy Cole, APHIS, San Francisco, CA  
 Carroll Collier, USAID, Washington, DC  
 H. Collins, APHIS, Gulfport, MS  
 R. A. Colon, Puerto Rico Department of Agriculture,  
     San Juan, PR  
 Doyle Conner, Commissioner of Agriculture, Tallahassee, FL  
 Sonny Conner, Florida Foliage Association, Apopka, FL  
 Charles A. Conover, University of Florida, Apopka, FL  
 Tim Corbett, APHIS, San Francisco, CA  
 R. Corea, SAG, Santiago, Chile  
 H. M. Couey, ARS, Hilo, HI  
 J. R. Coulson, ARS, Beltsville, MD  
 Wayne Crain, Florida Fruit and Vegetable Association,  
     Orlando, FL  
 A. E. N. Cross, New Zealand Apple and Pear Marketing Board,  
     Hastings, New Zealand  
 Gera Curry, CDFA, Sacramento, CA  
  
 Pat S. Dale, MAF, Auckland, New Zealand  
 Karen Darling, Deputy Assistant Secretary of Agriculture, USDA,  
     Washington, DC  
 Gene Davidson, APHIS, Seattle, WA  
 Gerald Davidson, Sunkist Growers, Inc., Sherman Oaks, CA  
 Bill Davis, Agriculture Counselor, U.S. Embassy, Tokyo, Japan  
 Jim Davis, EPA, Washington, DC  
 John Datt, American Farm Bureau Federation, Washington, DC

Kevin Deacon, New Zealand Apple and Pear Marketing Board,  
 Hastings, New Zealand  
 Harold Denmark, Florida Department of Agriculture, Gainesville, FL  
 D. I. Derr, International Apple Institute, McLean, VA  
 A. de Zeeuw, MAF, The Netherlands  
 James R. Dogger, ARS, Beltsville, MD  
 William Dowler, ARS, Frederick, MD  
 Jerry Dowling, Canada Department of Agriculture,  
 Windsor, Ontario, Canada  
 J. C. Dreves, Plant Industry Division, Michigan Department of  
 Agriculture, Lanning, MI  
 Betsy Drake, APHIS, Hyattsville, MD  
 Ned Drucker, Lime Grower, San Diego, CA

Robert M. Eads, APHIS, El Paso, TX  
 David Edgell, USDC, Washington, DC  
 Bill Edwards, Agriculture Commissioner's Office,  
 Los Angeles, CA  
 Bobby Edmundson, APHIS, Charleston, SC  
 Al Elder, APHIS, Hyattsville, MD  
 Paul Engler, California Agriculture Commissioner, Los Angeles County,  
 Los Angeles, CA  
 R. E. W. Elliott, MAF, Wellington, New Zealand  
 C. D. Elmore, ARS, Stoneville, MS  
 Ronald Elmore, APHIS, Detroit, MI  
 Leo Ennis, APHIS, Charleston, SC  
 J. Esparza, IICA, Santiago, Chile  
 Elaine Exerbido, Soc. American Florists, Washington, DC  
 James Fergusson, USCS, Vancouver, British Columbia  
 H. C. Feese, USCS, Washington, DC  
 C. Andy Field, Texas Department of Agriculture, Austin, TX  
 Claude Finnell, County Agriculture Commissioner, Imperial County,  
 El Centro, CA  
 Robert Flaskerd, Minnesota Department of Agriculture,  
 St. Paul, MN  
 G. T. Fitzgerald, Willoughby, OH  
 Travis N. Flint, MAF, Auckland, New Zealand  
 H. L. Ford, APHIS, Washington, DC  
 J. H. Ford, APHIS, Gulfport, MS  
 L. B. Forer, Pennsylvania Department of Agriculture,  
 Harrisburg, PA  
 Fred Foster, APHIS, Miami, FL  
 L. R. Fouchs, Agriculture Attache, U.S. Embassy, Santiago, Chile  
 Gordon Fowler, Canada Department of Agriculture,  
 Vancouver, British Columbia  
 J. L. Fowler, APHIS, Santiago, Chile  
 Stanley Fujiyama, Amfac Tropical Products, Hilo, HI  
 B. R. Fullingim, Texas Association of Nurserymen, Dallas, TX

Janis Garish, APHIS, Detroit, MI  
 Michael Garazi, APHIS, Detroit, MI  
 Ruben Garcia, APHIS, El Paso, TX  
 Dick Gaspari, APHIS, San Antonio, TX  
 D. Gates, APHIS, Guatemala City, Guatemala

H. D. Garwood, National Plant Board, Topeka, KS  
 Richard Gashalla, Florida Department of Agriculture, Gainesville, FL  
 Tom George, Florida Nurseryman, FL  
 J. Eugene Gilmore, ARS, Honolulu, HI  
 Lloyd Glenny, MAF, Hastings, New Zealand  
 James Glosser, APHIS, Washington, DC  
 W. R. Goode, APHIS, Brownsville, TX  
 R. H. Gonzales, University of Chile, Santiago, Chile  
 J. O. Gorman, USCS, Washington, DC  
 James Gorson, Air Transportation Association, Washington, DC  
 B. W. Granberry, APHIS, Brownsville, TX  
 J. B. Grant, NASDA, Washington, DC  
 David Gray, Canada Department of Agriculture, Ottawa, Canada  
 W. H. Grimes, Chemago Corporation, Kansas City, MO  
 J. H. Grooterdorst, Nurseryman, Boskoop, The Netherlands  
 Mike Guidici Pietro, APHIS, Hastings, New Zealand  
 Gail Guilliermo, Pandol Brothers, Inc., Delano, CA  
 Nick Gutierrez, APHIS, Hemosillo, Sonora, Mexico

Ed Hale, California Association of County Commissioners,  
 Yreka, CA  
 Dan Haley, Western Growers Association, Sacramento, California  
 C. W. Hall, APHIS, Uvalde, TX  
 J. A. Hammett, Tennessee Department of Agriculture,  
 Nashville, TN  
 Mike Harada, USPS, Honolulu, HI  
 Bill Hargraves, American President Lines, Oakland, CA  
 Don Harrington, USPS, Washington, DC  
 H. J. Hartley, American Farm Bureau Federation  
 Park Ridge, IL  
 Chales E. Havens, APHIS, Hyattsville, MD  
 B. W. Hawkins, APHIS, Washington, DC  
 Diane Headley, Canada Department of Agriculture,  
 Ottawa, Canada  
 John Hedley, MAF, Wellington, New Zealand  
 W. F. Helms, APHIS, Washington, DC  
 Don Henry, CDFA, Sacramento, CA  
 Stanley Higa, Hawaii Department of Agriculture, Honolulu, HI  
 Mike Hirata, USPS, Honolulu, HI  
 Ray Hite, APHIS, Reyneldsburg, OH  
 Las Holguin, APHIS, Hidalgo Border Station, Mexico  
 Bruce Hopper, Canada Department of Agriculture, Ottawa, Canada  
 Jan Hordijk, Netherlands Plant Protection, Lisse, The Netherlands  
 Nobuhide Hosokawa, MAFF, Tokyo, Japan  
 M. D. Huettel, ARS, Beltsville, MD  
 Arthur H. Hughes, U.S. Embassy, The Hague, The Netherlands  
 Terry L. Humfeld, Bedding Plants, Inc., Okemos, MI  
 A. C. F. Hung, ARS, Beltsville, MD  
 Mrs. Hunter, Hawaiian Tropical Foliage Co., Hilo, HI  
 Jan Hupperman, Netherlands Plant Protection, Hillegom, The Netherlands  
 D. F. Husnik, APHIS, Washington, DC  
 Neil H. Hyde, MAF, Auckland, New Zealand

Fumihiko Ichinohe, MAFF, Yokohama, Japan  
 Oscar Isaacson, APHIS, Chicago, IL



Richard Ivess, MAF, Wellington, New Zealand  
Takeshi Iwamoto, MAFF, Tokyo, Japan

Paul Jacobsen, Danish Plant Protection, Copenhagen, Denmark  
J. M. Jansen, Netherlands Plant Protection Service, Boskoop,  
The Netherlands

Robert D. Jackson, ARS, Beltsville, MD  
Gordon Johnson, APHIS, Winter Haven, FL  
Peter R. Johnson, MAF, Hastings, New Zealand  
Ronald L. Johnson, APHIS, Hyattsville, MD  
S. V. Johnson, Nebraska Department of Agriculture, Lincoln, NE  
Lt. Col. Claude S. Jones, CINCPAC, Honolulu, HI

Ken Kadlec, Texas Department of Agriculture, Austin, TX  
R. P. Kahn, APHIS, Beltsville, MD  
J. F. Karpati, APHIS, Manila, Philippine Islands  
Beta Ketaft, U.S. Embassy, Paris, France  
Richard Kinney, Florida Citrus Packers, Lakeland, FL  
Marshall Kirby, APHIS, Canberra, Australia  
K. Kiyomiga, FAS, Tokyo, Japan  
Don Kludy, NASDA, Washington, DC  
E. B. Knipling, ARS, Beltsville, MD  
Lloyd Knutson, ARS, Beltsville, MD  
W. H. Kosesan, Oregon Department of Agriculture, Salem, OR  
Hasse Kristensen, U.S. Embassy, Copenhagen, Denmark  
Lorin Krusberg, ARS, Beltsville, MD

Kurt Laenkholm, Danish Nurserymen's Association, Copenhagen, Denmark  
Po-yung Lai, Hawaii Department of Agriculture, Honolulu, HI  
Tom Lanier, APHIS, Hyattsville, MD  
Larry Lathrop, APHIS, Hyattsville, MD  
E. B. Lee, APHIS, Miami, FL  
Glenn Lee, APHIS, Hyattsville, MD  
J. O. Lee, APHIS, Washington, DC  
M. W. Lee, APHIS, Miami, FL  
Rebecca Lee, APHIS, Atlanta, GA  
Phil Letarte, U.S. Embassy, Paris, France  
Ray Lett, Assistant Secretary for Marketing and Inspection Services,  
USDA, Washington, DC  
Steve Lew, APHIS, Oakland, CA  
John Lightfield, APHIS, Hyattsville, MD  
R. W. Lighty, Mt. Cuba Center for Study of Piedmont Flora,  
Greeneville, DE  
Gloria Lloyd, Pesticide Regulation, Harpenden Lab, England  
Carl Loop, Florida Farm Bureau, Tallahassee, FL  
M. W. Love, APHIS, Miami, FL  
Robert L. Lyon, FS, Washington, DC

Paul W. Maas, Netherlands Plant Protection Service, Wageningen,  
The Netherlands  
H. E. Mabry, APHIS, Mission, TX  
Paul Madsen, Nurseryman, GASA Odense, Denmark  
Gartneriet Maegaard, Nurseryman, Ringe, Denmark  
Rex Magee, CDFA, Sacramento, CA  
H. Malaby, APHIS, San Francisco, CA

Linley Mann, Society of American Florists, Washington, DC  
Bill Manning, APHIS, San Juan, PR  
George Matsuda, USPS, Honolulu, HI  
C. A. McDaniel, APHIS, Gulfport, MS  
E. H. McEachern, California Association of Nurserymen,  
Sacramento, CA  
T. M. McGaffey, USPS, Honolulu, HI  
R. C. McGregor, University of Maine at Orono, Orono, ME  
Bobby McKnown, Florida Citrus Mutual, Lakeland, FL  
John McLeod, APHIS, Hyattsville, MD  
C. W. McMillan, Assistant Secretary of Agriculture for  
Marketing and Inspection Services, Washington, DC  
Lothar Meirer, David Del Curto S. A., Santiago, Chile  
J. Menn, ARS, Beltsville, MD  
Wade H. B. Matthews, U. S. Embassy, Santiago, Chile  
W. W. Metterhouse, New Jersey Department of Agriculture,  
Trenton, NJ  
Lou Meyer, APHIS, Miami, FL  
Ronald Micheili, National Cattlemens Association  
Washington, DC  
Arthur Millecan, CDFA, Sacramento, CA  
Helen Miller, U.S. Department of Agriculture, Export  
Development Council, Washington, DC  
H. J. Miller, Netherlands Plant Protection Service, Wageningen,  
The Netherlands  
Wallace Mitchell, University of Hawaii, Honolulu, HI  
Ramon Montero J., Exportadora Aconcagua Ltda., Santiago, Chile  
John Moore, EPA, Washington, DC  
Richard Moore, APHIS, Detroit, MI  
W. H. Moore, APHIS, Brownsville, TX  
Orlando Morales V., SAG, Santiago, Chile  
L. Gordon Morrison, MAF, Wellington, New Zealand  
W. L. Morris, Canada Department of Agriculture, Vancouver,  
British Columbia  
Adam Muchenfuss, APHIS, Charleston, SC  
A. J. Mulder, Aalsmeer Auction, Aalsmeer, The Netherlands  
F. D. Myers, APHIS, Sacramento, CA

John Naegel, CSRS, Washington, DC  
Pieter M. Nagtegaal, Shemex International BV, Aalsmeer, The Netherlands  
Takeshi Nakai, MAFF, Narita-shi, Chiba-Ken, Japan  
John D. Nalewaja, Weed Science Society of America, Fargo, ND  
Robert Nave, APHIS, Oakland, CA  
John Neal, ARS, Beltsville, MD  
Mary Neal, APHIS, National Association of PPQ Supervisors,  
Dulles International Airport, VA  
Fred Newhouse, USCS, Vancouver, British Columbia  
Carl Nichols, CDFA, Sacramento, CA  
Edmund L. Nichols, U.S. Embassy, Copenhagen, Denmark  
C. D. Nigro, APHIS, Moorestown, NJ

Joyce Okamura, APHIS, McAllen, TX  
H. R. O'Steen, APHIS, Gulfport, MS  
M. T. Ouye, ARS, Beltsville, MD  
Edward C. Overton, ERS, Washington, DC

Earl T. Ozaki, APHIS, Tokyo, Japan  
Richard Onzucka, APHIS, Honolulu, HI

Charles Parker, APHIS, El Paso, TX  
Jack Pandol, Pandol Brothers, Inc., Delano, CA  
Peter Paulson, Assistant Director of Agriculture, Copenhagen, Denmark  
Kent Parker, California Pork Producers Association, Davis, CA  
R. W. Patterson, Auburn University, Auburn, AL  
Stenberg Pedersen, GASA, Odense, Denmark  
Alan Pemberton, British Plant Protection, Harpenden Lab, England  
M. T. Pender, APHIS, Hyattsville, MD  
Suzanne Peterson, Hawaii Department of Agriculture, Honolulu, HI  
Arnold Pollock, MAF, Auckland, New Zealand  
Charles Poucher, Florida Department of Agriculture, Winter Haven, FL  
Gordon Powell, Canada Department of Agriculture, Vancouver,  
British Columbia  
Jorge Prado, Minister of Agriculture, MAF, Santiago, Chile  
J. M. Prescott, CIMMYT, Ciudad Obregon, Sonora, Mexico  
Ray Prewett, Texas Citrus Mutual, Harlingen, TX  
Alfonso Prohens, Grape Grower, Chile  
J. H. Pruett, Auburn University, Auburn, AL  
Charles Puffinberger, Maryland Department of Agriculture,  
Annapolis, MD

W. K. Quarles, Sunkist Growers, Inc., Van Nuys, CA

T. Rachi, MAFF, Narita-shi, Chiba-Ken, Japan  
Joseph Race, Citrus Nurseryman, FL  
Dwayne Rahe, FAS, Washington, DC  
A. F. Rainbow, MAF, Auckland, New Zealand  
Bob Rebhan, APHIS, Blaine, WA  
W. L. Redman, APHIS, Honolulu, HI  
John J. Reddington, Agriculture Attache, FAS, Wellington, New Zealand  
Paul Regenber, Danish Plant Protection, Copenhagen, Denmark  
Travis Richardson, APHIS, Kahului, HI  
J. D. Riggleman, Weed Science Society of America  
Wilmington, DE  
Kenneth Roach, Ohio Department of Agriculture, Reynoldsburg, OH  
Robert Roberson, CDFA, Sacramento, CA  
K. P. Robert, Wisconsin Department of Agriculture, Madison, WI  
F. A. Robinson, America Beekeepers Federation, Gainesville, FL  
G. G. Rohwer, APHIS, Washington, DC  
Dan Rosenberg, CDFA, Sacramento, CA  
Ken Ross, APHIS, Blaine, Washington  
Bill Routhier, CDFA, Los Angeles, CA  
Simon Ruigrok, Dutch Flower Bulb Exporter Association, Hillegom,  
The Netherlands  
T. H. Russell, APHIS, Hillegom, The Netherlands

Betty Sapp, Soc. American Florists, Alexandria, VA  
Dean Saunders, Agriculture Liaison to Senator Lawton Childs,  
Lakeland, FL  
Alba Sanchez, APHIS, San Juan, PR  
Tom Schatzi, ARS, Albany, CA  
W. L. Seal, APHIS, Gulfport, MS



R. P. Seely, Michigan Association of Nurserymen,  
 Lansing, MI  
 Peter Sellar, British Plant Protection, Harpenden Lab, England  
 Warren Shaw, ARS, Beltsville, MD  
 Fred H. Shepard, Eagle Marine Service, Oakland, CA  
 I. J. Shields, Arizona Commission on Agriculture and Horticulture,  
 Phoenix, AZ  
 S. Shimizu, MAFF, Narita-shi, Chiba-Ken, Japan  
 P. Y. Shinoda, Jr., Soc. American Florists, Alexandria, VA  
 H. S. Shirakawa, APHIS, Hyattsville, MD  
 Ed Shiroma, APHIS, Honolulu, HI  
 Isi Siddiqui, CDFA, Sacramento, CA  
 Nick Silva, APHIS, El Paso, TX  
 Mike Simon, APHIS, El Paso, TX  
 D. V. Singh, APHIS, Hyattsville, MD  
 M. T. Sinibaldi, INTEC Chile, Santiago, Chile  
 Ian Smith, EPPO, Paris, France  
 Jim Smith, APHIS, San Juan, PR  
 J. T. Smith, APHIS, Gulfport, MS  
 J. W. Snow, ARS, Beltsville, MD  
 Mochiyuki Sonda, MAFF, Yokohama, Japan  
 P. G. Snyder, APHIS, Hyattsville, MD  
 Bob Sousa, Papaya Administrative Committee, Honolulu, HI  
 Robert Spaide, APHIS, Hyattsville, MD  
 E. L. Spaugy, County Agriculture Commissioner, Riverside County,  
 Riverside, CA  
 J. H. Spence, APHIS, Gulfport, MS  
 Gustave Springer, Consultant, Dutch Bulb Growers, Washington, DC  
 Leon Stanley, Hawaii Department of Agriculture,  
 Honolulu, HI  
 James Stapleton, ARS, Beltsville, MD  
 T. W. Stark, Western Growers Association, Newport Beach, CA  
 H. W. Stensson, Etobicoke, Ontario  
 J. Stibik, APHIS, Hyattsville, MD  
 Jack Suwa, Hawaii Department of Agriculture, Honolulu, HI  
  
 S. R. Tagle, Grape Grower, Chile  
 S. E. Thewke, New Hampshire Department of Agriculture, Concord, NH  
 Kathleen Thuner, County Agriculture Commissioner, San Diego County,  
 San Diego, CA  
 A. Treur, Netherlands Plant Protection, Wageningen, The Netherlands  
 J. P. Triplar, Embassy of The Netherlands, Washington, DC  
 Mark P. Trostle, Texas Department of Agriculture, Austin, TX  
 Yasutaka Tsutsumi, MAFF, Tokyo, Japan  
 Bill Tubberville, APHIS, Brownsville, TX  
 Gordon Tween, APHIS, Mexico City, Mexico  
  
 S. E. Ulenberg, Netherlands Plant Protection, Wageningen,  
 The Netherlands  
 Ed Uyeda, APHIS, Hilo, HI  
  
 Jean Guye Vaillancourt, Canada Department of Agriculture, Vancouver,  
 British Columbia  
 Niek van der Graaf, FAO, Rome, Italy  
 H. van Os, Flower Bulb Inspection Service, Lisse, The Netherlands  
 A. H. van Renssen, Aalsmeer Auction, Aalsmeer, The Netherlands

Loos van Rijen, Lisse, The Netherlands  
J. W. van Schaik, Netherlands Plant Protection Service, Aalsmeer,  
The Netherlands  
Van Staaveren BV, Carnation Grower, Aalsmeer, The Netherlands  
Hans Van Der Lans, Import-Export, Schinnen, Holland  
Jack Vaughn, Florida Foliage Association, Apopka, FL  
J. A. J. Veenenbos, Netherlands Plant Protection Service, Netherlands  
P. Vermuelen, Dutch Bulb Exporters Association, The Netherlands  
John Vigil, El Paso, TX  
Randy Vogel, Illinois Nurserymen's Association, Tallula, IL

William Waisanen, APHIS, Detroit, MI  
J. K. Water, Netherlands Plant Protection Service, Wageningen,  
The Netherlands  
Howard Waterworth, ARS, Beltsville, MD  
R. S. Van Waveren, Dutch Bulb Growers Association, The Netherlands  
Lucian D. Weast, APHIS, El Paso, TX  
W. E. Weeks, Texas Citrus and Vegetable Association, Harlington, TX  
Lloyd Wendell, APHIS, Mission, TX  
Larry White, APHIS, Guatemala City, Guatemala  
Paul Whitley, APHIS, Los Angeles, CA  
Les Whitlock, Texas Citrus Growers Association, Brownsville, TX  
Jack Wick, California Association of Nurserymen, Sacramento, CA  
Walter Wille, APHIS, Toledo, OH  
Wendell Williams, Citrus Nurseryman, FL  
Col. Jim Winters, USAF, CINCPAC, Honolulu, HI  
John Wood, APHIS, Hyattsville, MD  
John Worley, APHIS, Mission, TX  
J. E. Wright, ARS, Beltsville, MD

M. P. Yager, United Fresh Fruit and Vegetable Association,  
Alexandria, VA  
Ed Yamaki, APHIS, San Francisco, CA

Joseph Zumbrock, APHIS, Grand Rapids, MI

## Appendix C

Organizations with which the Panel conferred or that otherwise had input for the study.

Adams Citrus Nursery, Inc., Florida  
Agricultural Research Service, USDA, Washington, DC  
Air Transport Association of America, New York, NY  
Alabama Department of Agriculture, Montgomery, AL  
American Association of Nurserymen, Inc., Washington, DC  
American Beekeepers Federation, Gainesville, FL  
American Farm Bureau Federation, Washington, DC  
American Phytopathological Society, Washington, DC  
American President Lines, Oakland, CA  
American Seed Trade Association, Washington, DC  
Amfac Tropical Products, Hilo, HI  
Animal and Plant Health Inspection Service, USDA, Washington, DC  
Arizona Commission of Agriculture and Horticulture, Phoenix, AZ  
Auburn University, Auburn, AL

Bedding Plants, Inc., Okemos, MI  
British Columbia Department of Agriculture, Vancouver, British Columbia  
British Plant Protection Service, Harpenden Lab, England

California Agriculture Commissioners Association, Yreka, CA  
California Association of Nurserymen, Sacramento, CA  
California Grape and Tree Fruit League, Fresno, CA  
California Dept. of Food and Agriculture, Sacramento, CA  
California Pork Producers Association., Davis, CA  
Canada Department of Agriculture, Vancouver, British Columbia  
Chemagro Corporation, Kansas City, MO  
Commission (Mexico-Guatemala-United States) for the Prevention and Control of the Mediterranean Fruit Fly (MOSCAMED), Guatemala City, Guatemala  
Cooperative State Research Service, USDA, Washington, DC  
Customs Service, U.S. Department of the Treasury, Washington, DC

Danish Nurseryman's Association, Copenhagen, Denmark  
Danish Plant Protection Service, Copenhagen, Denmark  
David Del Curto S.A., Santiago, Chile  
Diamond Head Papaya Company, Hilo, HI  
Florida Dept. of Agriculture, Division of Plant Industry, Gainesville, FL  
Dutch Bulb Exporters Association, The Netherlands  
Dutch Bulb Growers Association, The Netherlands

Eagle Marine Service, Oakland, CA  
Economic Research Service, USDA, Washington, DC  
Embassy of The Netherlands, Washington, DC  
Entomological Society of America, College Park, MD  
Environmental Protection Agency, Washington, DC  
Exportadora Aconcagua Ltda, Santiago, Chile



Federal Plant Quarantine Inspectors National Association,  
Washington, DC

Florida Citrus Mutual, Lakeland, FL

Florida Citrus Packers, Lakeland, FL

Florida Citrus Nurserymen's Association, FL

Florida Department of Agriculture and Consumer Services,  
Tallahassee, FL

Florida Farm Bureau, Gainesville, FL

Florida Foliage Association, Apopka, FL

Florida Fruit and Vegetable Association, Orlando, FL

Florida Nurserymen and Growers Association, Orlando, FL

Foreign Agricultural Service, USDA, Washington, DC

Forest Service, USDA, Washington, DC

Food and Agriculture Organization, Rome, Italy

French Plant Protection Service, Paris, France

Hawaii Department of Agriculture, Honolulu, HI

Hawaiian Tropical Foliage Company, Hilo, HI

Hortex Group of Companies, Auckland, New Zealand

Illinois State Nurseryman's Association, Tallula, IL

Institute of Food and Agricultural Sciences, University of Florida,  
Gainesville, FL

Inter American Institute for Cooperation on Agriculture, Santiago, Chile

International Apple Institute, McLean, VA

Iowa Department of Agriculture, Des Moines, IA

Irvine Corporation (Fruits), Irvine, CA

Kansas State Board of Agriculture, Topeka, KS

Los Angeles County Agriculture Commission, Los Angeles, CA

Maryland Department of Agriculture, Annapolis, MD

Meister Publishing Company, Willoughby, OH

Michigan Association of Nurserymen, Lansing, MI

Michigan Department of Agriculture, Lansing, MI

Ministry of Agriculture and Fisheries, Wellington, New Zealand

Ministry of Agriculture, Forestry and Fisheries, Tokyo, Japan

Minnesota State Department of Agriculture, St. Paul, MN

Montana Department of Agriculture, Helena, MT

Mt. Cuba Center for the Study of Piedmont Flora, Greenville, DE

National Association of Agriculture Employees, Washington, DC

National Association of PPQ Supervisors, Washington, DC

National Association of State Departments of Agriculture,  
Washington, DC

National Cattlemen's Association, Washington, DC

National Plant Board, Topeka, KS

National Plant Board Advisory Council, Washington, DC

Nebraska Department of Agriculture, Lincoln, NE

Nematological Society of America, Washington, DC

Netherlands Plant Protection Service, The Netherlands

New Hampshire Department of Agriculture, Concord, NH

New Jersey Department of Agriculture, Trenton, NJ

New Zealand Apple and Pear Marketing Board, Hastings, New Zealand

Ohio Department of Agriculture, Reynoldsburg, OH  
Oregon Department of Agriculture, Salem, OR  
Organization International Regional Salud Agropecuaria (OIRSA), San  
Salvador, El Salvador

Pandol Brothers, Inc., Delano, CA  
Papaya Administrative Committee, Honolulu, HI  
Pennsylvania Department of Agriculture, Harrisburg, PA  
Puerto Rico Department of Agriculture, San Juan, PR

Riverside County Agricultural Commission, Riverside, CA

San Bernandino County Agricultural Commission,  
San Bernandino, CA  
San Diego County Agricultural Commission, San Diego, CA  
Servicio Agricola y Ganadero (SAG), Santiago, Chile  
Shemex International BV, Aalsmeer, The Netherlands  
Sheridan Nurseries, Ltd., Etobicoke, Ontario  
Society of American Florists, Washington, DC  
Sunkist Growers, Inc., Van Nuys, CA

Tennessee Department of Agriculture, Nashville, TN  
Texas Association of Nurserymen, Dallas, TX  
Texas Citrus Growers Association, Brownsville, TX  
Texas Citrus Mutual, Harlingen, TX  
Texas Citrus and Vegetable Association, Harlingen, TX  
Texas Department of Agriculture, Austin, TX

United Fruit and Vegetable Association, Alexandria, VA  
University of Chile, Santiago, Chile  
University of Florida, Gainesville, FL  
University of Hawaii, Honolulu, HI  
University of Maine at Orono, Orono, ME  
U.S. Agency for International Development, Washington, DC  
U.S. Agriculture Export Development Council, Washington, DC  
U.S. Armed Forces, CINCPAC, Honolulu, HI  
U.S. Customs Service, Washington, DC  
U.S. Department of Agriculture, Washington, DC  
U.S. Department of Commerce, Washington, DC  
U.S. Department of the Treasury, Washington, DC  
U.S. Embassy, Copenhagen, Denmark  
U.S. Embassy, Paris, France  
U.S. Embassy, Santiago, Chile  
U.S. Embassy, The Hague, The Netherlands  
U.S. Embassy, Tokyo, Japan  
U.S. Embassy, Wellington, New Zealand  
U.S. House of Representatives, Washington, DC  
U.S. Postal Service, Washington, DC  
U.S. Post Office, Honolulu, HI  
U.S. Senate, Washington, DC  
U.S. Travel and Tourism Administration, Washington, DC

Vermont Department of Agriculture, Montpelier, VT

Weed Science Society of America, Fargo, ND

Western Growers Association, Newport Beach, CA

Wisconsin Department of Agriculture, Madison, WI



## Appendix D

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Appendix E

THE FINAL REPORT

by the

APHIS EVALUATION TASK FORCE

on the

McGREGOR REPORT, "THE EMIGRANT PESTS"

to

Leo G. K. Iverson  
Deputy Administrator  
Animal and Plant Health Inspection Service  
U.S. Department of Agriculture

Task Force Members:

H Ivan Rainwater, Chairman, PPQ, APHIS  
Roy W. Burnham, PPQ, APHIS  
Ronald B. Caffey, VS, (now with PPQ) APHIS  
Eugene H. Davidson, ORS, (now with PPQ) APHIS  
Bert Levy, PPQ, (now with Statistical Services  
Staff, MPI) APHIS  
Mosco W. Love, PPQ, APHIS  
Dean F. Lovitt, Plant Industry Division  
Michigan Department of Agriculture  
George A. Merrill, PPQ, APHIS  
Mitchell Slobodnik, PPQ, APHIS

June 1974

## INTRODUCTION

This is the final report by the Animal and Plant Health Inspection Service (APHIS) Evaluation Task Force in response to the Administrator's charge to review "The Emigrant Pests" by Dr. Russell C. McGregor. "The Emigrant Pests" is a report of an indepth task force study of certain aspects of agricultural quarantine inspection activities. The McGregor Report was released in August 1973. The APHIS Committee was selected in September 1973, and instructed to consider the McGregor report, along with other relevant information, and submit recommendations to improve procedures and operations within PPQ.

The APHIS report follows the format and numbered recommendations used in Chapter 8. "Conclusions and Recommendations," of "The Emigrant Pests." Four additional recommendations were added by the APHIS committee. A majority of the McGregor recommendations are currently in use, but generally, to a limited degree. Efforts should be greatly intensified and a policy of complete commitment must be adopted upon acceptance of the APHIS report.

"The Emigrant Pests" may be used as a supplement to the APHIS report. This suggestion is made because the explanations and background information contained in the McGregor report are helpful for a better understanding of the McGregor recommendations which are expanded or modified in the APHIS report.

Each recommendation in the APHIS report follows the same format. "A Background and Current Status" statement is presented first. This is followed by the recommendations. Some recommendations contain several parts. Implementation dates are given for these recommendations that require a time element to develop. Recommendations or parts of recommendations not containing specific implementation dates should be given a high action priority as soon as they are formally accepted.

## RESPONSIBILITY OF THE DEPUTY ADMINISTRATOR (DA)

The recommendations of this committee should be modified or rejected in a timely fashion. The DA should use the full weight of his office to insure that adopted recommendations are implemented. He should identify the individuals and/or organizational elements in PPQ responsible for the implementation of each recommendation accepted. Each designated individual or organizational element should be required to report to the DA his progress in implementation not later than one year from the date of acceptance of the relevant recommendation and at suitable periods thereafter until the objectives are satisfied.

Much time and money have been spent by the McGregor and APHIS task forces in:

1. Reviewing and evaluating this country's programs for preventing the introduction of exotic animal diseases and plant pests.
2. Analyzing the threat these pests and diseases pose to the environment and agriculture of the United States.
3. Recommending new or revised strategies and concepts for protection against such pests and diseases. The APHIS committee has faith that these efforts will not be set aside or forgotten through lack of interest and commitment.



## OUTLINE OF REPORT

- 81.1 Emphasize Global Movements of Pests and Diseases
- 81.2 Adopt Balanced Objectives
- 81.3 Concentrate on Highest Risks
- 81.4 Reduce Biological Uncertainties
- 81.5 Emphasize Compliance
- 81.6 Encourage Private Efforts
- 81.7 Establish Risk Standards
- 81.8 Provide Evaluation
- 81.9 Involve State Regulatory Organizations
  
- 82.1 Develop a Source Inspection System
- 82.2 Revise Program Strategies
- 82.3 Monitor Customs' Baggage Seizures
- 82.4 Continue Mexican Border Inspection of Passenger Vehicles
- 82.5 Intensify Enforcement of Germ Plasm Traffic Regulations
- 82.6 Develop a Pan American Quarantine Organization
- 82.7 Information Storage, Retrieval, and Analysis System
- 82.8 Greater Use of Compliance Agreements for Aircraft Clearance
  
- 83.1 Review and Streamline Regulations
- 83.2 Develop More Uniformity of Inspection Procedures
- 83.3 Employ Statistical Sampling
- 83.4 Stress The Use of New Detection and Control Devices
- 83.5 Test Pathway Survival
- 83.6 Establish Administrative Penalties

## 81.1 EMPHASIZE GLOBAL MOVEMENTS OF PESTS AND DISEASES

### Background and Current Status:

"Emphasize Global Movements" refers to the principle that control of plant and animal pests and diseases within a country is one of the best safeguards against their movement in international trade and their spread to other countries. Although this principle is generally accepted worldwide by plant protection officials, the practical application is very slow.

### The United States:

1. Is an active member of the International Plant Protection Convention (IPPC) and two regional Foreign Agriculture Organization (FAO) affiliates--the Caribbean Plant Protection Commission (CPPC) and the North American Forestry Commission (NAFC).
2. Participates as an observer in other regional plant protection organizations.
3. Carries out preclearance of commodities, baggage, retrograde cargo, and carriers on request.
4. Participates in a number of formal and informal agreements with certain foreign countries covering approval of foreign meat processing establishments and animal and plant pest and disease eradication and suppression programs in foreign countries.
5. Currently is working out arrangements with Canada and Mexico to establish a regional organization to be known as the North American Plant Protection Organization (NAPPO).

The United States must accelerate its efforts in striving to meet the long-range international objective of stopping global movement of plant and animal pests and diseases. Such efforts would include an intensive commitment of cooperation and coordination with foreign nations in combination with expanded pest and disease detection and control programs within the United States.

### Recommendations:

1. Support and promote among nations the importance of more uniformity in plant and animal import requirements and methods of commodity inspection.

2. Support and promote among exporting countries the need to accept full responsibility that only pest and disease-free commodities are exported.

3. Strengthen measures against foreign shippers and countries exporting products to the United States not meeting plant and animal import requirements as certified. Such measures could include:

a. Removal of foreign establishments from lists of establishments approved to process and handle plant and meat products entering the United States.

b. Requiring immediate reexport of infested or contaminated commodities in lieu of treatment or cleaning.

c. Requiring mandatory treatment of specific products.  
IMPLEMENTATION DATE: July 1, 1975.

4. Encourage development of a complete exchange program of pest information between neighboring countries and call for full participation in a worldwide exchange of pest information under the IPPC framework.

5. Extend to State plant protection officials formal invitations to participate in international phytosanitary conventions and meetings by designating a representative of the State's plant regulatory board to attend specific international meetings as a member of the U.S. delegation. IMPLEMENTATION DATE: January 1, 1975.

6. Agree that each major new policy and procedure of the plant and animal programs of the U.S. must be routinely reviewed to assure that the international ramifications have been considered and international opportunities have been utilized.

7. Establish overseas positions for U.S. phytosanitary officials to assist exporting countries in meeting U.S. import requirements. Such assignments could be limited to principal regional export areas of the world. Consideration could be given to sharing the workload with Canada which is considering a similar type of program in Europe. Workload could also be coordinated and shared with the U.S. Meat and Poultry Inspection (MPI) and Veterinary Services (VS) Programs personnel now assigned to European areas. To assure earliest implementation of this proposal, consideration could be given to arranging for the U.S. bulb inspector in charge residing in the Netherlands to carry out the functions of this position on a part-time basis to determine feasibility of such a program. IMPLEMENTATION DATE: Fiscal Year 1975.



## 81.2 ADOPT BALANCED OBJECTIVES

### Background and Current Status:

As stated in the McGregor Report, statutory laws are now broad enough to permit complete exclusion of exotic agricultural pests and diseases. However, this has not been possible to achieve with present modes of transportation, trade practices, and available resources. The legal authority in many instances also permits the application of restrictions. Restrictions based on good scientific techniques for the alteration of the goods and accompanied by well-designed sampling schemes can be an extremely powerful approach in achieving an adequate level of protection.

### Recommendation:

The following objective is recommended as an aid in developing a more realistic understanding of the program and as a guideline for establishing more meaningful goals in pest protection:

"The objective of plant and animal quarantine programs should be to provide adequate protection to the plant and animal resources of the Nation while avoiding unnecessary restrictions on international trade and commerce. This will be done by appropriate inspection at ports of entry, mandatory treatment as a condition of entry when warranted, maintaining an active National survey and detection system, encouraging shipments of clean cargo, fostering preclearance at source, and by excluding or restricting foods, materials, or carriers as necessary to prevent the entry of those exotic plant and animal pests and diseases expected to be of economic significance."

## 81.3 CONCENTRATE ON HIGHEST RISKS

### Background and Current Status:

The APHIS committee recognizes the extreme importance of this principle, but believes the McGregor ranking system to be inadequate. An informal ranking system is presently in effect which differs substantially in basics and results from the McGregor system. Both suffer from a lack of accurate and definitive criteria to measure pest risks. An effective ranking system will readily define pest risks and allow the program to evaluate manpower and program defense effectiveness at any program site.

### Recommendations:

1. A "top 100" ranking of potential plant pests and animal diseases not occurring in the United States should be developed. Prior to developing such a list, scientifically defensible criteria should be established. Consideration should be given to host and frequency of importation into the United States, commodity pathway, pure "hitchhikers," world distribution, life cycle, seasonal trends, population trend, weather requirements in country of origin, and interception frequency in the United States. The ranking system should also consider risk as it applies to geographical variation in the United States.
2. An additional list of lesser economically important pests also should be defined. These lesser important pests would be those that occur on crops of limited importance, but have considerable economic influence on a local or isolated U.S. environment.
3. It should be understood that such a ranking system will not identify those pests which are considered insignificant in their foreign environment, but could become important in a new ecological niche.
4. That the ranking of plant pests and animal diseases be on separate lists.
5. That as animal diseases and plant pests are identified for ranking, this information be communicated immediately to PPQ field personnel and State officials.
6. That biological data be developed for each pest as it is identified with distribution to the PPQ field personnel and State officials.
7. That a staff group be selected to develop criteria, ranking, and biological data. Specialists are to be included on the work group. IMPLEMENTATION DATES: Staff should be named by July 1, 1974. Ranking criteria should be developed by August 1, 1974. Partial lists of the "top 100" plant pests and animal diseases with biological data should be completed by January 1, 1975. It is recognized that ranking will be a long-term task.

## 81.4 REDUCE BIOLOGICAL UNCERTAINTIES

### Background and Current Status:

Developing knowledge about exotic plant pests and animal diseases has been an important part of the Plant Protection and Quarantine

Program (PPQ) system. In many cases, the information is inadequate. Also, it has not always been available to the port of entry without initiating considerable communications with the Washington office.

The knowledge is maintained partly by reviewing pertinent foreign and U.S. publications. Such information is evaluated by PPQ and VS technical staffs and disseminated to the field offices. There has been some research on exotic plant pests and animal diseases whenever safeguards can be enforced. Some research on exotic plant pests and animal diseases is conducted at foreign sites with Public Law (P.L.) 480 funds.

#### Recommendations:

1. That PPQ and VS develop an information system that will expeditiously disseminate technical information about exotic plant pests and animal diseases to field personnel for use in the inspection, treatment, survey, and detection programs. This information should include distribution, host reference, colonization, life history, seasonal data, and feeding habits.  
IMPLEMENTATION DATE: January 1, 1975.

2. That PPQ port personnel be directed and encouraged to contribute to this important information-gathering program. This kind of information would relate to seasonal interception trends, inspectional hints, how to look for pests, and other information that only this part of the PPQ program can gather.  
IMPLEMENTATION DATE: January 1, 1975.

3. That PPQ develop a formalized nationwide alert system which would communicate instant plant pest and animal disease risks occurring at ports of entry. IMPLEMENTATION DATE: January 1, 1975.

4. That reevaluation be made of those plant pests which PPQ considers to be important or unimportant and for which little or no information is available.

5. That exotic animal disease research work continue to be prohibited within the United States. (Plum Island is exempt.)

6. That exotic plant pest research work performed in the United States require stringent safeguard measures.

### 81.5 EMPHASIZE COMPLIANCE

#### Background and Current Status:

The McGregor Report recommends compliance, and not enforcement, as the operating philosophy. Although the deterrent effect that



might be produced by a super informational and educational campaign has a potential for risk reduction, we believe current world travel conditions would not permit 100 percent reliance on this system. Primary emphasis is now placed on enforcement with some compliance through a weak educational program. The educational program is limited by Agency resources and a lack of total commitment.

#### Recommendations:

1. Develop and emphasize a type of enforcement and penalties procedure that will achieve the objectives of a compliance system.
2. The Department should not make exceptions to regulatory requirements unless technically valid and, if made, should then be equally applicable to everyone.
3. Streamline the prosecution process and provide for administrative penalties.
4. Greatly expand the involvement of the Information Division (INFO) in the further development and redirection of the quarantine program. Through the INFO, involve the U.S. Travel Service, which is well equipped for distribution of informational material. The INFO also should become more forceable in seeking cooperation with Federal, State, and local governments, travel organizations, travel trade organizations, trade union groups, chambers of commerce, civic and professional groups, and international and regional organizations which promote travel and tourism throughout the world.

## 81.6 ENCOURAGE PRIVATE EFFORTS

### Background and Current Status:

We agree with the McGregor Report that protection is a joint public-private endeavor. Considerable effort is now directed to this area. The APHIS information program is presently surveying major travel agencies for distribution of informational material. In addition to the distribution of such material in the United States, there are plans for distribution in foreign countries. Several sets of poster-type displays have been developed. Individual posters are presently displayed in some international airports in the United States.

Requests to airlines for active assistance in distribution of informational materials to individual travelers has not been too successful. It is apparent that such private industry cooperation can only be achieved if there is incentive for its assistance.

Recommendations:

1. Increase budget for more effective informational development. IMPLEMENTATION DATE: July 1, 1975.
2. Investigate possible ways industry can be encouraged and/or required to participate in effectively educating the traveling public to agricultural regulations.

81.7 ESTABLISH RISK STANDARDS

Background and Current Status:

The development of explicit standards delineating how much risk will be tolerated in respect to known economic pests in cargoes, baggage, and carriers has limited acceptance. The technical difficulties in developing risk standards and promoting acceptance of the concept by members of Congress, Federal and State regulatory officials, and representatives of industry becomes a very difficult undertaking. Much scientific data is required. The risk-standard concept is less acceptable in the case of animal products due to the nature of the disease organisms involved. The concept is currently applied on a limited basis.

Recommendations:

1. Expand development of risk standards on a biologically sound basis where practicable and justifiable.
2. Review present pest data collection systems of PPQ to determine if the systems will provide the information needed to establish pest risk standards. IMPLEMENTATION DATE: July 1, 1975.
3. Determine relationship between numbers of pest interceptions and numbers needed to establish infestations. This is a long-term program in coordination with research institutions.
4. Determine "pathway survival" routes.

81.8 PROVIDE EVALUATION

Background and Current Status:

Surveys and detection methods, such as blacklight trapping, local port surveys, and Mediterranean fruit fly trapping, are being conducted at various ports of entry. This is being handled as part of port-of-entry inspectional activities. Tick surveillance is already an on-going program with VS.

Baggage inspection produces a large number of agricultural contraband seizures. Baggage interceptions amount to approximately 18 per 1,000 passengers, with approximately 60 percent of these found in hand-carried baggage as opposed to hold or checked baggage. Emphasis is continuing to be placed on baggage inspection through cooperative efforts between APHIS and the U.S. Customs Service.

#### Recommendations:

1. Greatly expand the survey and detection program presently in use in and around international airports and seaports, foreign cargo movement and storage areas, border crossings, and other areas considered susceptible to pest establishment. This specific program should overlap or tie-in with the current national survey and detection program which should be considerably expanded.

2. Cooperative efforts with other countries through FAO and other available channels should be initiated in assessing the effectiveness of baggage inspection in providing quarantine protection. No reduction in baggage inspection should be initiated without sufficient supporting evidence. Care should be taken to include countries that are comparable to the United States as far as animal disease occurrence is concerned. These would include Australia, New Zealand, Ireland, and Japan. Similar data on the effectiveness of cargo inspections would be desirable. The initial inquiries are to be forwarded by September 1, 1974. Continuous assessment from new data is needed.

3. Develop procedures to evaluate the effectiveness of the inspectional process at ports of entry.

### 81.9 INVOLVE STATE REGULATORY ORGANIZATIONS

#### Background and Current Status:

This recommendation was initiated by the APHIS Task Force. State regulatory organizations, with few exceptions, have not been directly involved to a major degree in the foreign plant and animal quarantine and inspection program. Containerization of ship and air cargoes and the proliferation of international air freight and passenger flights in effect create innumerable ports of entry within this country. To meet this challenge, all of the capacities and expertise, including that of the State regulatory agencies, are needed.

#### Recommendations:

1. State regulatory expertise and capacity should be considered as part of a total plant and animal protection system within the country. Assignment of responsibilities in survey



and detection, and export inspection, should be made to State regulatory agencies through a Memorandum of Understanding. Assignment of tasks in import inspection are to be made on an individual basis, when appropriate and mutually advantageous.

2. Criteria should be developed for authorization of State regulatory personnel to act for APHIS in relation to both import and export activities.

3. Promote uniformity of response to quarantine situations by utilizing the facilities of the APHIS Training Center at Battle Creek, Michigan, for assisting in the training of State, as well as, Federal personnel. IMPLEMENTATION DATE: July 1, 1975.

## 82.1 DEVELOP A SOURCE INSPECTION SYSTEM

### Background and Current Status:

This is one of the strategies proposed by the McGregor Report to help bring about an international pest control system. Source inspection, as advocated by the McGregor Report, means that the inspections and treatments required by U.S. import regulations would be performed at origin by plant protection officials or private contractors of the exporting country with advice and monitoring by U.S. officials. (Private contractors would be licensed and regulated by the USDA.) The purpose of the source inspection system, Agricultural Source Inspection and Surveillance Technique (ASIST), is to provide incentives for exporters and foreign countries to ship pest-free commodities and to establish sanctions if they do not.

A modified source inspection system has been in limited use for some time. Certification of meat imports from animal disease countries has been given broad authorization by VS. On the plant side, however, the source inspection has been performed only under supervision of PPQ inspectors in the clearance of bulbs, treatment of fruits, and inspection of returning U.S. military movements.

The goal of requiring pest-free cargoes through a source inspection or treatment is an idealistic one, but one that all countries must sooner or later come to grips with. The IPPC, FAO, with 64 members, appears to hold promise since it provides a basis for governments to consider the ASIST approach. The United States, after years of lagging behind, became a member in 1972 and must now take positive actions in the directions for which each contracting government has agreed to make provisions. We must begin to work closely with foreign countries in requiring valid foreign certificates. The FAO can assist in this program.

### Recommendations:

The APHIS committee proposes a modified source inspection system. The McGregor Report emphasizes it would be a mistake to minimize the effort required to implement a complete source inspection system. A multitude of problems would have to be investigated and solved. We believe a modified version as a beginning should be considered. There should be a deemphasis on the routine inspection and the monitoring of fumigations and a corresponding emphasis on the use of sound scientific, managerial, and statistical procedures. The recommendations below reflect this modified approach:

1. The modified source inspection system should be implemented on a case-by case basis.
2. That APHIS employees be assigned to countries on a short term to acquaint the foreign officials with U.S. regulations. This would be in addition to any other foreign assignment positions.
3. That sampling at U.S. destinations must be a part of the source inspection system (SIS).
4. That the degree of inspection of sampling of cargoes in the U.S. be reduced when a country can comply fully with this SIS. Monitoring of each shipment may be the only requirement in the United States when approved.
5. That treatments at origin may be performed by private contractors, but supervision and certification will be required by the country-of-origin plant protection officials.
6. That penalties be assessed to certified shipments determined not to be plant pest or animal risk free. The penalty should be severe enough to discourage repeats. There should be a followup system so that the officials in the originating countries will be advised of infractions and deficiencies.
7. That participation by PPQ in the country of origin be one of monitoring only whenever this strategy is implemented in a country.

## 82.2 REVISE PROGRAM STRATEGIES

### Background and Current Status:

Biological principles and information have been utilized within the constraints of the legal framework and the resources available to minimize animal disease and plant pest risk without undue interruption of international trade and travel. Exclusion has

played a role in this activity, but so has compromise. Whether there has been an appropriate balance between the two is somewhat controversial and probably will continue to be. Basic to the development of strategies is adequate knowledge of such factors as disease and pest biology and distribution, commodity and carrier risk, pathways, pathway survival, and eradication and control mechanisms. It is recognized that this type of information must come from research. However, much of it must be currently obtained by extrapolation as opposed to being generated by research specifically designed to provide answers to problems peculiar to the program.

#### Recommendations:

1. Strategies should receive constant review supported by an ongoing research program directed toward the development of more effective and efficient policies and procedures for preventing the introduction and establishment of exotic pests and diseases. Research funds should be budgeted by APHIS for this purpose and utilized for finance directed research by the Agricultural Research Service (ARS), State experiment stations, or private industry. IMPLEMENTATION DATE: July 1, 1975.

2. Continue to exercise exclusion when:

- a. There is no other reliable strategy available.
- b. The risk level and the probable impact of pest or disease introduction on the food, forest, and fiber production capability of this country are of such magnitude that any other strategy is untenable.
- c. There is persistent pest or disease risk associated with a commodity.
- d. There is a persistent lack of cooperation from an exporting country or an importer.

### 82.3 MONITOR CUSTOMS' BAGGAGE SEIZURES

#### Background and Current Status:

The agricultural inspector is now participating in baggage inspection by being available in the Customs baggage area on an "on call" standby basis during baggage inspection. When the Customs officer encounters items of agricultural interest, the agriculture inspector responds and handles the material. There is no formal procedure in the current program to measure the effectiveness of Customs' inspection for USDA.



Recommendations:

1. Maintain the agriculture inspectors' participation in baggage inspection. This would preclude mandatory seizures when there is no biological risk.
2. Set up procedures to increase Customs' effectiveness through a monitoring program which would include:
  - a. High-level meetings to discuss the proposed monitoring program and assess Customs' reaction. It is an important first step to sell the program to Customs and receive full backing of headquarters and Regional officials.
  - b. Responsible PPQ program staffs and the PPQ liaison officer working to set up procedure with the U.S. Customs Service, including acceptable standards.
  - c. Strong support from the U.S. Customs Service and Customs inspectors through an understanding of the proposed program and methods for correcting deficiencies when found.
  - d. USDA should conduct the actual monitoring program.
3. Immediate application of Customs fine procedure on a nationwide basis for agricultural materials for false declarations and smuggling attempts.
4. Conduct a review of the baggage operation after the above programs have been implemented to measure the effectiveness.

IMPLEMENTATION DATE: January 1, 1975.

#### 82.4 CONTINUE MEXICAN BORDER INSPECTION OF PASSENGER VEHICLES

Background and Current Status:

Under the authority of the Mexican Border Act of 1942, USDA inspectors at major border ports actively participate in the inspection of vehicles arriving from Mexico or points south. This inspection is accomplished in cooperation with other Federal Inspection Service (FIS) Agencies. Most activity involves vehicular baggage inspection. Most interceptions of prohibited plant and animal material result from this type of inspection.

Each year there is an increase in the number of vehicles returning from Mexico. Along with this increase, a greater number of vehicles are returning from Central and South American countries via the Pan American Highway. For the past several years, the South-Central Region has kept a record of the number of vehicles entering New Mexico and Texas ports of the United States that originated in Central and/or South American countries. In FY 1971,

754 vehicles were reported and in FY 1972, 1,077 were reported.. These totals only indicate the numbers actually reported by Customs and USDA. Mexico provides an avenue for the importation of the African (or Brazilian) bee, Mediterranean fruit fly, Cancrosis "B" disease of citrus, and other pests from Central America and South America. Interceptions of Mexican fruit fly, West Indian fruit fly, avocado pests, citrus blackfly, potato weevil, and potato smut are not uncommon at Mexican border ports. Golden nematode is also confirmed as occurring in Mexico. Interceptions of prohibited animal products, such as pork, poultry, eggs, and live birds, are extremely high. Prohibited meat originating in countries other than Mexico has been intercepted. Smuggling of prohibited agricultural products is not an uncommon practice, particularly when corresponding American food items are high priced or scarce.

#### Recommendations:

1. Contrary to the McGregor Report, APHIS-PPQ should continue to participate in vehicular secondary baggage inspection. Primary inspection commitments should be reduced to the absolute minimum considered advantageous.

2. Emphasis should be placed on the inspection and examination of vehicles and baggage arriving from the interior of Mexico and Central and South American countries.

3. PPQ inspectors should maintain the independence of inspecting those vehicles which are considered to be of high agricultural risk and coordinate this inspection with Customs and Immigration. Interagency cooperation should be maintained in the PPQ mission by an active and ongoing cross training program.

## 82.5 INTENSIFY ENFORCEMENT OF GERM PLASM TRAFFIC REGULATIONS

### Background and Current Status:

The movement and handling of research organisms can readily become pathways or avenues of entry of dangerous plant and animal pests and diseases unless scientists are aware of regulations, maintain the right attitude, and conduct their research in a competent manner. Adequate regulations for controlling the entry, handling, and maintenance of exotic pests and germ plasm as objects of experimentation are available and in practice. However, due to accelerated world movement of germ plasm and exotic pests and the existence of certain situations relating to handling practices and laboratory facilities, many regulatory procedures need to be corrected or strengthened without delay.

### Recommendations:

1. Intensify regulation of plant and plant pest germ plasm through closer supervision and development of more specific procedures.
2. Develop and implement stronger publicity programs for disseminating information pertaining to regulations covering the entry and handling of experimental materials. Information specialists should be utilized in designing more effective public information programs to reach all biological scientists.
3. Reappraise all laboratory facilities and test sites presently in use and establish a monitoring system for each as appropriate. More specific guidelines for handling test materials should be developed for use both by the regulating officials and the scientists.
4. More attention should be given to detecting and investigating possible violations of pest movement regulations. Violations should be publicized. Violators should be prosecuted when the situation merits. Scientists should clearly understand that, as importers of germ plasm, they are accepting responsibility for any adverse economic effects resulting from unauthorized release or accidental escape of regulated material.
5. PPQ field personnel should have closer liaison with universities and other scientific organizations which work with test organisms. Research workers have more incentive to follow proper entry and handling procedures when information and assistance are easily available.

## 82.6 DEVELOP A PAN AMERICAN QUARANTINE ORGANIZATION

### Background and Current Status:

Important plant and animal pests and diseases are known to occur in various South American countries. The northward movement of agricultural commodities from South American countries into or through Central America and Mexico meets little coordinated resistance. Quarantine restrictions are enforced by the various countries without a unified effort. The Brazilian bee, the Mediterranean fruit fly, golden nematode, and foot-and-mouth disease are examples of pests that can move northward and threaten U.S. agriculture. The establishment of a cooperative commission would enhance the effectiveness of efforts to prevent the northward spread of plant and animal pests and diseases which occur in South America. Plant protection officials in Mexico, Canada, and the United States have met several times recently to discuss the establishment of a Pan American quarantine organization. A meeting to formally establish the NAPPO is scheduled for August 1974.



Recommendation:

The United States should strongly assist the officials of Mexico and Canada in moving forward as quickly as possible to initiate the objectives of the proposed NAPPO soon after the commission is established.

82.7 INFORMATION STORAGE, RETRIEVAL, AND ANALYSIS SYSTEMBackground and Current Status:

This recommendation was initiated by the APHIS Task Force. Many operations of PPQ produce information that can be and should be used in decisions made at all levels in PPQ. This situation will be compounded if the recommendations of this committee are accepted. In the past, use of the computers has been haphazard--the Ecological Evaluations Staff is concerned with statistical computations, the Pest Survey and Technical Support Staff is concerned with pest interception reports, and the Methods Development Staff is concerned with pest management reports. Within the last year or so, the computer section of the Management Improvement Division (MID) surveyed the data processing requirements of PPQ.

The pest interception system can adequately produce a yearly report. It requires weeks to extract other valuable information from the files of this system. A system is required that can respond in minutes or hours, rather than in days or weeks. A system that can integrate the information gathered from diverse sources is also required. The system must be oriented to solving the problems of PPQ and not to the interests of computer specialists and other supporting elements. The system must be flexible to meet changing needs over many years. The time or money required for major modifications of a computer system very often can be ill afforded.

Recommendations:

An integrated computerized information storage, retrieval, and analysis system should be developed for PPQ. Note that this proposal extends beyond port inspection operations and into the areas of the domestic programs.

- a. Specifications of the needs of PPQ should be developed by PPQ using computer specialists, engineers, and statisticians as consultants. IMPLEMENTATION DATE: January 1, 1975.
- b. Specifications for the computer system should be outlined. IMPLEMENTATION DATE: April 1, 1975.
- c. The system should be purchased or developed and implemented. (A completion date estimate is not appropriate at this point.)

## 82.8 GREATER USE OF COMPLIANCE AGREEMENTS FOR AIRCRAFT CLEARANCE

### Background and Current Status:

This recommendation was initiated by the APHIS Task Force. Currently there is limited application of compliance agreements with airlines. Present clearance procedures require USDA inspectors to board all arriving foreign flights (except direct arrivals from Canada and precleared flights). They inspect the plane for left-over agricultural material in the galley area and passenger sections. Inspectors remove restricted material to the laboratory for inspection and disposal. Selected flights are inspected for hitchhiking insects, plant residue from cargo shipments, and blood stains. Garbage is removed and destroyed by ground personnel according to established procedures. This operation is monitored by USDA inspectors. Many flights are routinely inspected day after day which present little or no pest risk.

Clearance of aircraft under compliance agreement procedures would be the responsibility of the airline according to the terms of the agreement executed. USDA inspectors would monitor the operation to assure compliance with the provisions of the agreement. The manpower now used for routine boarding of low risk aircraft could be better utilized to check for hitchhiking insects, blood stains, plant residue, etc. Compliance agreements would afford the Inspector in Charge a valuable tool to make more efficient use of his manpower where the greatest risk occurs.

### Recommendation:

Actively pursue the application of compliance agreements to aircraft clearance on a selective basis. Guidelines to execute and monitor agreements is to be completed by September 1, 1974.

## 83.1 REVIEW AND STREAMLINE REGULATIONS

### Background and Current Status:

The McGregor Report recommends:

1. That a formalized and regular arrangement for discussion of key problems with industry should be established to advise USDA on the need to revise or adopt new regulations.

2. That a complete review of quarantine regulations should be undertaken which includes explicit judgements about scientific integrity, as well as administrative feasibility, from the point of view of the airlines, shippers, and the general public.

The APHIS committee finds that:

1. Formalized and regular arrangements for discussion of APHIS regulations are currently in practice. These groups, which allow for dialogue between regulators and the regulated, include the following:

a. The National Plant Board Advisory Council (NPBAC), which is composed of representatives from four regional plant boards and the National Plant Board, has the prerogative of inviting representatives from industry, State and Federal regulatory groups, and scientific fields.

b. In-house task forces made up of headquarters staffs and field personnel are assigned indepth review of specific quarantine programs each year. University and extension scientists and administrative persons, State and Federal regulatory and scientific groups, representatives of industry, and others are contacted for input from their respective areas of expertise.

c. The APHIS Regulatory Services Staff, PPQ, and Program Services Staff, VS, make regular reviews of quarantines and related regulations affecting their respective areas of responsibility.

d. Direct communications systems, including the DA's letter, are utilized to keep State plant regulatory officials, industry representatives, and others informed of proposed changes in Federal plant regulations which might affect their States or industry and provide a channel for receipt of their views.

2. There is a need for more frequent complete reviews of all quarantines and related regulations. Lack of resources contributes to this deficiency.

#### Recommendation:

No change is required in the present systems of discussing regulation problems with industry and State regulatory officials. Regular and complete reviews of all quarantines and related regulations should be intensified as resources improve.

## 83.2 DEVELOP MORE UNIFORMITY OF INSPECTION PROCEDURES

### Background and Current Status:

There are more "established procedures for inspection" than is acknowledged in the McGregor Report. Standard procedures have been developed and implemented for many activities, including



surface vessel boarding, sealing ships' stores, aircraft garbage handling, fruit and vegetable inspection, and bagging inspection. Most inspectors have been through the Training Center and have worked in ports where good inspection procedures are practiced. Training, imagination, innovation, and good common sense lead to good inspection practices. It is recognized that there is a need for improved uniformity in application of inspection practices in several areas of the Program, as well as the initiation of uniform procedures in some inspection areas not now covered. However, uniform inspection procedures should not be regarded as a directive for the use of cookbook methods by inspectors. (This is the method recommended by the McGregor Report.) Uniformity refers to the approach to the problems. It not only allows variation in procedures from port to port, but virtually assures that such rational and administratively approved differences will occur and are to be expected.

#### Recommendations:

1. The purposes of an inspection action must be established prior to the establishment of an import inspection procedure. Examples of such purposes include information gathering, quality control, and shipment acceptance or rejection. Subordinate to the acceptance of purposes are the development of statistical sampling procedures and biological methodology.

2. Each proposed procedure should be determined to be scientifically, statistically, and operationally rational and should be field tested prior to its final adoption. The establishment of uniform procedures cannot be accomplished overnight. They will have to be introduced over a period of time.

3. A systematic review of procedures should be adopted to keep them current with changing problems. Once established, procedures should not be considered unchangeable when conditions merit change.

4. It is recommended that two specific operational areas should receive immediate attention in the establishment of uniform procedures:

a. Standardize export certification procedures between regions and ports.

b. Standardize miscellaneous cargo inspections. A joint effort by PPQ staff including Ecological Evaluation, Methods Development, and Port Operations is needed to develop the necessary cargo inspection standards.

### 83.3 EMPLOY STATISTICAL SAMPLING

#### Background and Current Status:

Statistical sampling is required to assure that data observed is representative of the population from which it was taken. Without such representativeness, any resulting policy decision is suspect. The exact procedures used depend upon factors such as the purpose of the inspection, infestation levels considered acceptable, and the odds for being wrong with which one is willing to live. Thus, no general rules can be set. Class-by-class decisions must be made. Under present procedures, little representative sampling of this type is being done in import inspection. A few inroads have been made in inspections covering apple and pear importations and in the detection of animal diseases.

#### Recommendations:

We agree with the McGregor Report that statistical sampling should be the policy of PPQ and VS inspection systems. Inspectors should be trained to modify established statistical sampling procedures to meet the nuances of conditions encountered in their daily duties.

### 83.4 STRESS THE USE OF NEW DETECTION AND CONTROL DEVICES

#### Background and Current Status:

Research and development of new scientific devices which can detect various agricultural contraband, and consequently increase the effectiveness of baggage inspection, are extremely desirable. Contact has been made with the U.S. Customs Service's research personnel involved in developing new detector equipment through PPQ's Liaison Officer to Customs. In 1971, inquiry was made as to the feasibility of using sensing dogs as a means of detecting agricultural contraband. Customs has been successful in using narcotic detector dogs. In January 1972, PPQ and VS representatives recommended that serious considerations be given to procuring two trained dogs and a qualified handler for a pilot project at a central parcel post facility.

#### Recommendations:

1. Continue to maintain close contact with Customs through the PPQ Liaison Officer to keep abreast of new detection methods developed by that Service.

2. Secure the latest research data from appropriate sources on possible applicability of inspection by use of bioluminescence and spectrometry. The contacts are to be initiated by January 1, 1975.

3. A pilot project involving the use of detector dogs should be initiated and the results evaluated. The arrangements for the training of two trial dogs is to be initiated by January 1, 1975.

4. Studies should be continued with X-ray devices for use in baggage inspection.

5. PPQ should designate an individual to have full responsibility for maintaining a continuing current knowledge of advanced detection technology as it is developed and be alert to all practical applications of such technology toward increasing the effectiveness of baggage inspection. The selected individual should have a strong educational and experience background in physical sciences or engineering. Such designation should be coordinated with all operational, developmental, and evaluation staffs of the Programs.

### 83.5 TEST PATHWAY SURVIVAL

#### Background and Current Status:

Present efforts attempt to concentrate foreign plant and animal quarantine resources on those pathways that are thought to provide the greatest risk of entry and establishment of exotic pests. It must be recognized, however, that a 100 percent scrutiny of commodities in those pathways is not being accomplished and is not possible with present resources. A realistic appraisal of possible future resources, a workload inflated by predictable increases in volume, and speed of transportation in world trade and international travel does not suggest that the equation will become more favorable.

It is also evident that, in numerous instances, little is known about actual pathway survival. The choice of pathway for surveillance has been based largely upon the capability of the host, parts thereof, or associated commodities to carry a pest or disease. The wisdom of choice is then validated by lack of known established infestations in the United States. This judgement is made without actually knowing whether the pest would have survived the pathway in the first place.

#### Recommendations:

1. Design and obtain specific research on the pathway survival of diseases and pests as a continuing function of risk assessment. IMPLEMENTATION DATE: July 1, 1975.

2. Structure the APHIS budget to provide for obtaining research assistance from ARS, State experiment stations, and private industry. IMPLEMENTATION DATE: FY 1975.



## 83.6 ESTABLISH ADMINISTRATIVE PENALTIES

### Background and Current Status:

This recommendation was initiated by the APHIS Task Force. Regulatory activities involving the importation of plant and animal products into the United States would be considerably strengthened if arrangements were made to modify the penalty provisions of the Plant Quarantine Act (PQA) and the Federal Plant Pest Act (FPPA) to include civil penalty authority. One of the principal deterrents to enforcement of regulations issued under these acts is the present procedures that must be followed in obtaining criminal penalties for violations. Civil penalty provisions are desirable under certain conditions and would add much impetus to effective plant and animal pest and disease protection procedures.

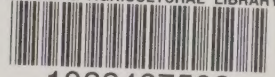
### Recommendation:

Establish civil (administrative) penalty provisions under the PQA and the FPPA and increase fines under the current criminal provisions from \$500 to \$1,000.

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